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On Painful and Tender Incipient Ovarian Tumours.

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EXPERIENCE teaches us that an inflamed ovary is tender to the touch. On the other hand, we know that a pedunculated* ovarian glandular papillomatous or dermoid cyst is not necessarily tender. The great majority are entirely overlooked until they have risen above the pelvis, and after that epoch in their history tenderness implies certain well-known complications.

Again, an inflamed ovary feels painful, whilst an ovarian tumour, complications apart, does not, as a rule, give rise to pain, a very plain explanation of the fact that it is so often overlooked in its earliest stages.

Then, when a large ovarian tumour distends the abdomen, there may be similar disease on the other side, in an incipient condition. We know from repeated experience, that the smaller tumour, still in the pelvic cavity, causes no pain at all, and is not tender on palpation, at least such is the rule. On the other hand, an inflamed ovary is occasionally associated with a large cyst of the opposite ovary. The former, pressed upon by the tumour, is in such a case very painful and markedly tender to the touch.

To the above rules, however, there are exceptions. An inflamed ovary may not be very tender, whilst in subacute inflammation the pain may be trifling. More important is the fact that an ovarian tumour in its earlier stages, before it has risen above the pelvic

* True ovarian tumours more or less encapsuled and all other broad ligament tumours, are not considered in this communication; but we must remember that even when tense they are seldom painful or tender.

brim, may be both painful and tender. I may add that pelvic symptoms really due to inflammatory changes in the opposite ovary or even in the uterus may obscure diagnosis, but in the two cases which I will describe in full, there was a painful tumour without any pelvic inflammation.

The credit for turning attention to the diagnosis of small ovarian tumours must be awarded to Dr. Davenport, of Boston, Mass.* Two years later I myself reported six cases from my own practice, rejecting a considerable number where it was not certain that the cystic degeneration of the ovary represented a true neoplasm.† Whilst Davenport confined himself to the consideration of cases where the tumour was so small as not to cause any appreciable enlargement of the abdomen, I have further excluded all where the tumour was not absolutely below the pelvic brim, and where at the same time there was much pain such as is experienced by patients with inflammation of the appendages. In all except one (case 6 in the tables) the pelvic tumour was recorded as distinctly tender to the touch, and I am under the impression that in the remaining case, an instance of myoma, the tumour was slightly tender.

Davenport avowedly discussed "small ovarian tumours." His series must be noted here. It included 10 cases. In 8 there was pain, whilst in one of the 2 in which it was not present the tumour had just begun to distend the abdomen, the swelling not being "appreciable," that is to say, it was not detected by the patient, but was found out accidentally by the doctor whom she consulted on account of hæmorrhage. In my experience the majority of ovarian cysts give no pain at first. Unfortunately, Davenport includes no systematic notes of pelvic exploration in his report, and in none out of the ten cases is it stated that the tumour was tender to the touch. This writer, it must be added, investigated with great care the menstrual history of his cases, with one exception. Thus, out of 9 cases there was menstruation normal in degree in 2, in one of the 2 it was painful, marked diminution in 1, and menorrhagia in 6. In 2 out of the 6 the bleeding was severe. In the case of diminution of show and in one of the cases of menorrhagia there was a big, heavy uterus, and its relation to the catamenial disturbance was not evident.

* "The Diagnosis of Small Ovarian Tumours." *Boston Med. and Surg. Journ.*, 1896, Vol. cxxxv., p. 353.

† "Ovarian Tumours simulating Inflamed Ovaries, including a Case of Ovarian Myoma." *Edinburgh Med. Journ.*, New Series, Vol. iii., 1898, p. 449.

Before turning to my own experience, I will relate Davenport's conclusions:—

(1) Small pelvic tumours are usually accompanied by well-marked symptoms.

(2) Pain is usually present, but its seat does not have any constant relation to the kind of tumour or to its location.

(3) Menstrual disturbances are the rule, and by far the most frequent abnormality is menorrhagia or metrorrhagia, or both.

(4) There seems to be a direct causal connection between severe uterine hæmorrhage and cystic ovaries, which are closely adherent to the uterus.

(5) Uterine hæmorrhage associated with a pelvic tumour which is uninfluenced by intrauterine treatment (curetting or electricity) is more likely to be due to an ovarian tumour than to a fibroid.

(6) Reflex symptoms are comparatively rare, and occur in the later stages of the disease.

Want of space forbids me from discussing these conclusions in full. No. 5 is very doubtful, but the question of the differential diagnosis of small uterine fibroids from small ovarian tumours must be put aside. In No. 1 and No. 2 "usually" should, in my experience be replaced by "exceptionally." Davenport is quite correct as to the uncertain relationship of the seat of pain and the character of the tumour. In No. 3 "the rule" is questionable, No. 4 deserves careful clinical investigation, No. 6 I believe to be quite true.

I have said enough to explain that though the experienced may not accept all Davenport's conclusions, they deserve much consideration. I find that sometimes small ovarian tumours are accompanied by well-marked symptoms and that not only pain, but tenderness, on touch, may be present. I will confine myself to the consideration of such cases, under the strictest limitations as above laid down. The series includes 9.

A full report of the first six cases will be found in the paper to which I have already alluded. For convenience, I have arranged them, with the newer cases, in a table, which, I believe, will facilitate reference. I will now record three more under my care since the original paper was issued.

Case vii. A. A., 31, married 7 years, 1 child aged 6, no abortions, was admitted into my wards in the Samaritan Free Hospital on November 18th, 1903.

This patient had been, ever since February, 1903, under the observation of Dr. Cuthbert Lockyer in the out-patient department of the same hospital. At first she complained of pain in the left

iliac fossa, slight yellow discharge, and occasional scalding micturition. The period was regular, scanty, and very painful before the show appeared. The note on February 25th was "uterus retroverted, both ovaries prolapsed." On May 16th there was "great pain in left sacral region, uterus nearly vertical, mobility impaired, ovaries not felt." On September 30th I admitted the patient, kept her at rest for a few days, and discharged her at the end of a week, after applying a ring pessary; the uterus was distinctly retroflexed.

On readmission on account of continuance of the pain, a tender body like an enlarged ovary could be felt in Douglas's pouch; it was quite movable, the tenderness was marked, even when very gently touched. The displacement of the uterus remained unaltered; the vaginal discharge had disappeared altogether. The temperature remained a little above normal for a fortnight.

The patient was much worried by the long-standing pelvic pain. I kept her at rest for three weeks, and then did an exploratory operation on December 8th, 1903. I expected that ventro-fixation of the uterus would be necessary, and that probably I should find extensive tubal disease.

I was somewhat surprised to find no adhesions of any kind. The internal organs had sunk down low in the pelvis, which was elevated during the operation. The uterus was bulky and dragged back by the right ovary, which was very heavy and considerably enlarged; its tube was healthy, and the left tube and ovary showed no sign of disease. Considering the suspicious history of discharge of several months' duration, with pelvic pain referred to the left side, the absence of all trace of inflammatory disease, even in the left tube, was remarkable.

I at once was reminded of certain cases in my operative practice already reported, therefore I removed the right appendages and pulled the uterus upwards and forwards. Recovery was uneventful.

I examined the patient on March 15, 1904. She complained of occasional pain in the right iliac fossa, not rare when there is the pedicle of a recent ovariotomy in its neighbourhood. The uterus was no longer retroflexed, although the patient had been walking about ever since the middle of January; hence it must have been the weight of the right ovary that pulled its body backwards. There was no resistance or tenderness in the right fornix. Menstruation was scanty, with pain preceding the show, as before the operation.

The right tube and mesosalpinx were normal. The ovary was converted into a round body, feeling like a lump of fat. There was

a large corpus luteum on its surface posteriorly, high up close against the attachment of the mesosalpinx. The entire ovary measured 2½ inches horizontally, 2 vertically, and about as much antero-posteriorly. Dr. Lockyer carefully preserved the ovary in formalin, and laid it open when it had become sufficiently hard. It was found to be a dermoid cyst filled with fat, which contained a few distinct hairs.

Case viii. M.R., 20, single, was admitted into my wards in the Samaritan Free Hospital on February 18th, 1904. She had been under the care of Mr. Corrie Keep, in the out-patient department since January 1st, as she had been subject for two years to pain in the right iliac region and loin. It prevented her from attending to her duties in service, but the pain subsided whenever she kept her bed, returning after exertion. She had also noted discharge from the navel, apparently due to eczema. Mr. Keep found the integuments of the umbilicus free from disease, and there was no vestige of a urachal fistula. He noted: "Uterus small, mobile, forwards and rather to right, cervix small and conical, os very small. Behind in Douglas's pouch and to left, is a tense, elastic, smooth, mobile, round swelling of the size of a Tangerine orange, probably small ovarian." At the end of six weeks the patient still complained of pain, and therefore was admitted.

The patient, though born in London and never in her life a resident in the country, was remarkably healthy and well-nourished. In no sense was she neurotic, and there was no hyperæsthesia. The uterine cavity measured 3 inches, and a tender, movable oval body lay in Douglas's pouch, and much more to the left than to the right. The tenderness was apparently of the usual ovarian type, causing a sensation of nausea. The catamenia were regular, appearing every four weeks, with moderate show and always more or less pain. The temperature was normal, the pulse 80, regular, small volume. The patient had never suffered from any illness except measles, which attacked her in early childhood. I have known much damage to be done to the ovaries in scarlet fever, as in typhoid,* but this patient had never suffered from those maladies.

This case reminded me strongly of those already published, as there was little, if any, evidence of past inflammation. Still, I felt a little doubtful about diagnosis. An inflamed ovary may be palpable, as a tender body which, after rest, disappears almost completely.

*In a case of scarlet fever under my notice, permanent amenorrhœa followed, and the young patient assumed the appearance of a thin, elderly spinster. Typhoid and cholera may disorganise the ovaries. There is no evidence that typhoid promotes the development of cystic disease, as Knowsley Thornton used to believe.

I operated on March 1st, 1904. There were no adhesions, abdominal or pelvic. The right ovary was converted into a cyst of the size of a small orange, and lay in Douglas's pouch and the left fornix, pushing up the left ovary, which seemed quite normal, and bore a corpus luteum on its surface. The right ovary was removed.

In this case the pain had been felt in the right iliac fossa, and therefore corresponded to the side of the ovary affected, whilst the tumour was found on palpation to be more to the left than the right. A heavy ovary tends to fall towards the opposite lateral fornix when there are no adhesions; the same is the case with a heavy tubal mole; thus I once found a gravid right tube lying almost entirely in the left fornix. The patient recovered speedily.

Dr. Lockyer put the ovary into formalin solution and cut through it vertically three weeks later. The Fallopian tube and mesosalpinx were healthy and in normal relation to the ovary, which was 2 inches in vertical and $1\frac{3}{4}$ inches in horizontal measurement. The ovary on section showed a cystic cavity, relatively small. It contained a clear fluid, which, as Dr. Lockyer remarked, did not become a solid semi-opaque jelly like the fluid contents of a glandular ovarian cyst hardened in formalin. Into this cystic cavity protruded two masses of fat containing hair, behind which was a considerable tract of normal ovarian tissue, including two old *corpora lutea* becoming cystic. There were also a few graafian follicle cysts; the liquor folliculi had solidified as a semi-opaque jelly.

The last case came under my care before the seventh and eighth. It is of peculiar interest on account of the age of the patient.

Case ix. Mrs. P., 63, married many years, was referred to me in March, 1903, by Dr. Styan, of Ramsgate. He wrote on April 2nd: "She is 63, and has always had good general health. Last October she first had pain in the hypogastrium and sickness. The pain has continued more or less ever since, and extends at times down the right thigh; it is increased by walking, defæcation is often painful, but not micturition." There was great difficulty about defining the pelvic condition; a muco-purulent discharge had been observed and endometritis certainly existed.

The patient was a stout, elderly woman, a little weak owing to a recent attack of influenza followed by bronchitis. She had borne 8 children. Her last confinement occurred nineteen years before she came under my care. The menopause occurred rather suddenly at 49. When young the show used to be very free. There was no rise of temperature, and the pulse was 90, strong, and regular.

The cervix was short and soft and pressed down by a soft body,

which was distinctly tender. Its association with the cervix was impossible to define precisely, even under an anæsthetic. I operated in a nursing home. On opening the peritoneal cavity a dull red tumour was exposed. I passed my hand behind and under it, and pushed it up gently, but its walls, being very soft, burst just as it came out of the abdominal wound. Much pale ochre-yellow fluid and greasy hair escaped. It was a dermoid cyst of the right ovary with a normal pedicle, including Fallopian tube, mesosalpinx, and ovarian ligament. The uterus was small and soft, and there was no evidence of cancer of its body, and the patient remains in good health. The left ovary was small, hard, and atrophied.

In considering this series nine seems a very small number, but, in truth, if all the limitations I have laid down be observed, these cases will be found to be rare. I have excluded all instances of small ovarian tumours still in the pelvis where, after some inquiry, the patient admits that she has occasionally felt pains in the pelvic or hypogastric regions; many such cases have come under my care, but in none did the patient seek relief on account of pain as in all the nine included in the appended table. Far more rare is tenderness on touch, quite distinct from hyperæsthesia.

A brief analysis of these strictly defined cases may prove of some interest.

Age. Four of the patients were between 20 and 30 years old, 2 between 30 and 40, 2 between 40 and 50, and 1 as old as 63. The case in an old woman suggests that the tumour (a dermoid) was latent rather than incipient, but that question cannot be discussed at length. Latency, or more accurately speaking, arrested development, might have existed in some of the other cases, even in the youngest. It is possible that arrested development from some influence in the tumour itself may involve pain, a question to which I shall return. But as to the question of age in relation to pain and tenderness, I have found those symptoms conspicuous as a rule by their absence in patients of any age with small ovarian tumours.

Menstruation. The relation of this phenomenon to the other conditions in these cases was very irregular. In 3 it was normal, with pain in two out of the three. In only 2 was there menorrhagia. Davenport, like myself, did not find this symptom constant, Coe and Tait have noted its association with small ovarian cysts. In all 3 cases of dermoids before the menopause menorrhagia was absent. In my own experience increase of the menstrual flow is by no means the rule in the history of ovarian tumours, and when it is present it may be due to uterine, tubal, or general disorders. It is not the

rule in fibroma of the ovary, and it was absent in the case of pure myoma (No. 6).

In 3 cases the period was scanty, but in 1 (No. 4) the patient's health had been greatly impaired, and in Nos. 1 and 7 the flow of blood was naturally slight. Amenorrhœa tends to develop in cases of malignant disease of the ovaries, but not as a rule until they have risen above the pelvis. Lastly, 1 patient had passed the menopause (No. 9).

The most definite feature about menstruation in association with these small and painful tumours is the fact that menorrhagia is not the rule.

Displacement of Uterus. This subject naturally enters the mind of anyone interested in the general question under consideration. It was the exception. There were two definite cases of backward displacement and one where the old, atrophied uterus was anteverted by a small, heavy dermoid (No. 9). In this instance the deviation of the uterus from its normal axis could hardly have accounted for the pain. Anteversion by the pressure of a large ovarian tumour is very common, and I have never found it to be in itself a cause of pain. On the other hand, in the 2 cases where there was backward displacement (Nos. 6 and 7), there is very good reason to believe that it played a part in causing pain, whilst it was the result of the development of a small heavy tumour (No. 6 myoma, No. 7 dermoid) which dragged on the uterus.

These two cases seem very definite, but the fact remains that backward displacement was not constant, but, on the contrary, exceptional.

We must note No. 1 in association with displacement. A cystic ovary as big as a hen's egg lay in Douglas's pouch, incarcerated there by the utero-sacral ligaments which firmly gripped its pedicle. I have no doubt that this condition accounted for the pain. The uterine body in retroflexion is sometimes gripped in this manner, with painful results. Large tumours with their bases in Douglas's pouch overcome the resistance of the utero-sacral ligaments very speedily. Hence there is not the pain experienced when a narrow pedicle is gripped by these ligaments.

Evidence of Inflammation. This is another very important factor. Out of these 9 cases it was only present in 2 (Nos. 3 and 4) and in these 2 alone were any *adhesions* found—the most definite evidence of inflammation. It is interesting to note that in the 4 cases of dermoids (Nos. 2, 7, 8, and 9) signs of old or recent inflammatory changes were conspicuously absent, remarkable when

we bear in mind how common they are in association with dermoids above the pelvic brim.

Turning to the cases where inflammation was a definite feature, in No. 4 the patient had suffered from suppurative parametritis, badly neglected. Yet there was no adhesion except between the right Fallopian tube and a piece of omentum. This case would have interested Matthews Duncan, who insisted that parametritis and perimetritis were absolutely distinct. No. 3 is interesting. The left ovarian tumour was strongly adherent to the pelvic peritoneum, the only instance of adhesion of the tumour itself in the entire series. We must note how both Fallopian tubes were quite free from disease. But the ovarian cysts were the seat of hæmorrhages. The case seems clearly an instance of inflammation of a pair of small cysts, with intra-cystic hæmorrhage, a condition not unknown in larger tumours. We must observe that in no case was the pedicle twisted, not even in any of the dermoids so often the subject of axial rotation when large. The absence of this interesting and familiar complication, a fertile source of inflammatory changes, explains to a certain extent their rarity in this series.

In conclusion, I cannot say that there is any clear explanation why in these cases the tumours were painful and more or less tender to touch. In hydrops folliculi the pressure of the tense follicle on normal ovarian tissue undoubtedly causes pain, but in this series the cysts were not of that class. Possibly, however, there was painful pressure on normal tissue in these cases owing to some irregular or unusual development of the new cystic growth. I cannot feel sure of such an explanation, for I have often found quite three-quarters of the normal ovary lying intact on some part of the surface of a big cystic tumour, and I have examined incipient cystic ovaries where all trace of the normal tissue was already lost to the naked eye, but in neither of these opposite conditions were pain and tenderness necessarily present. Still, the above explanation is conceivable, especially in No. 3, where there was intra-cystic hæmorrhage. I must repeat what I already observed in the *Edinburgh Medical Journal* six years ago that we know of no special symptom nor group of symptoms by which a small painful ovarian tumour in the pelvis can be distinguished from an inflamed ovary. When rest causes pain to diminish, whilst the pelvic swelling increases, the evidence that the ovary is cystic and not inflamed will be strong but not conclusive.

We must admit that painfulness of a small ovarian tumour is of direct advantage to the patient, for it betrays the presence of the new growth, which may be removed before it can do mischief. In none of the operations on the nine cases in this series was there any complication of the slightest gravity nor was convalescence otherwise than speedy.

TABLE OF CASES OF PAINFUL AND TENDER INCIPIENT OVARIAN TUMOURS.

All the cases recovered from operation. For full clinical report of Nos. 1 to 6 see "Ovarian Tumours Simulating Inflamed Ovaries," *Edinburgh Medical Journal*, Vol. iii, N.S., 1898, p. 449.

No.	Age	M. or S.	Children	Menstruation	History of Illness	Physical Signs	Condition at Operation	Nature of Tumour
1 E.H.	35	Md. 15 yrs.	3, youngest 12, no abort.	Reg. 4 wks., scanty, latterly painful	2 years persistent abdom. pain, much worse last 3 weeks	Uterus fairly movable. Small tender body right fornix; larger tender body left fornix	Not a trace of any adhesion. Left tumour incarcerated in Douglas's pouch by utero-sacral ligaments. Both ovaries diseased, removed	Papillomatous cystic disease of both ovaries
2 M.M.	44	Wid.	2, youngest 13	Reg., show moderate, apparently painless	About 1 year, severe pain referred to right side of pelvis. Dysuria during attacks	Uterus small; little tender body in left fornix; apparently fixed 2 months before operation. Just before operation it was larger and could be pushed upwards	No adhesions, right ovary, tube and uterus normal, cyst of left ovary which was removed	Dermoid cyst of left ovary, 3½ oz. fat, with hairs
3 Miss M.	25	S.	—	Menorrhagia, almost 2 wks., not very painful	1 year, pains in loins and left iliac fossa, severe dysuria	Uterus displaced to left, cavity 3 inches, tender swelling in left fornix and Douglas's pouch, fixed; smaller swelling in right fornix	Left ovary strongly adherent to pelvic peritoneum; tubes both normal. Both ovaries removed	Cystic adenoma both ovaries, main cavity in each ovary full of blood
4 S.B.	28	Md. 11 yrs.	2, youngest 8, abort. 2 years	Reg. 4 wks., scanty, very painful	Parametric abscess after miscar., 2 yrs. Pain in *left* iliac fossa, 7 weeks	Large tender swelling in *right* fornix, pushing uterus to left; hernia of parietes right groin at site of rupture of old abscess	Both ovaries cystic, no adhesions except between omentum and right tube. Both tubes dilated. Both ovaries and tubes removed, hernia repaired	Cystic disease of both ovaries, papillomatous growths in right cyst. Papilloma of left tube
5 E.M.	41	Md. 11 yrs.	4, youngest 13 mths., abort. 2 years	Reg. 4 wks., menorrhagia severe	Subject to menorrhagia since miscarriage, recently severe pain right iliac fossa and sacral region	Enlarged uterus tender, big swelling in right fornix. Uterus diminished in size after curetting, pelvic swelling increased	No adhesions nor evidence of pelvic inflammation. Cyst of right ovary, tube healthy, left ovary and tube normal; removal of right ovary and tube	Cystic adenoma of right ovary

No.	Age	M. or S.	Children	Menstruation	History of Illness	Physical Signs	Condition at Operation	Nature of Tumour
6 A.B.	27	S.	—	Reg. 3 wks., moderate show, much pain	9 months severe bearing-down pains (posterior lip of cervix uteri containing small cyst amputated 18 days before ovariotomy). No note about tenderness	Uterus 3 inches, *retroflexed*; oval body in left fornix connected with an elastic mass in Douglas's pouch. *Right fornix free*	No adhesions. Uterus retroflexed and retroverted by a heavy double tumour of *right* ovary, which had fallen behind and to the left of uterus. Left ovary normal; both tubes normal; right ovary removed	Solid myoma of right ovary, with a small almost unilocular cyst
7 A.A.	31	Md. 7 yrs.	1 child 6 yrs., 0 abort.	Reg. 4 wks., scanty, very painful before show	9 months pain left iliac fossa, retroversion of uterus. At first suspicious vaginal discharge, ovaries seemed prolapsed	Uterus *retroverted* and *retroflexed*. Movable, tender swelling in Douglas's pouch	No adhesions. Uterus pulled back by a heavy tumour of the right ovary. Tubes and left ovary normal. Right tube and ovary removed	Dermoid cyst of right ovary
8 M.R.	20	S.	—	Reg. 4 wks., show moderate, always pain	2 years pain right iliac region and loin	Uterus 3 inches; a tender, enlarged, oval body in Douglas's pouch and *left* fornix	No adhesions. Heavy cyst of right ovary, which had fallen behind and to *left* of uterus. Tubes and left ovary normal. Right ovary removed	Dermoid cyst of right ovary
9 Mrs. P.	63	Md.	8, youngest 19, 1 abort. over 30 yrs.	Menopause 14 years, menorrhagia when young	Hypogastric pains 6 months, beginning with sickness, mucopurulent discharge from uterus	Uterus small and soft, firm tumour, size of tennis-ball, tender to touch, its relation to uterus not clear	No adhesions. Heavy cyst of right ovary pushing down an atrophied uterus, no torsion of pedicle. Left ovary atrophied. Right ovary removed	Dermoid cyst of right ovary. Dull red, soft wall, single cavity full of grease and hair

Clinical Notes of a Series of Twenty-two Cases of Obstructed Labours, including Eight Cases of Induction of Labour, Four Cases of Symphysiotomy, and Ten Cases of Cæsarean Section.*

By Robert Jardine, M.D., F.R.S.E., *Professor of Midwifery in St. Mungo's College; Physician to the Glasgow Maternity Hospital; Examiner in Midwifery to the Scotch Conjoint Board, etc.*

During the past year my colleagues and I have treated 703 cases in the Glasgow Maternity Hospital, and in this number we have had to deal with 98 cases of contracted pelvis. This is certainly an extraordinary proportion, viz., about 1 in 7, and it does not by any means include all, but only those in which there was difficulty in delivery. The slighter forms, where delivery was effected by nature, are not counted. In the following paper I purpose giving notes of the cases of induction of labour, symphysiotomy, and Cæsarean section, which were done during the six months in which I was in charge of the hospital. With one exception they were all cases of rickety pelves. The results as regards both mothers and children can be contrasted, and an idea can be formed of the relative value of the operations.

Cases of Induction of Labour.

Case 1. Mrs G., æt. 31, II-para, was examined under chloroform on January 27th. The conjugata vera was estimated to be 3½in. The pelvis was generally contracted as well as flattened. The child's head could be easily pushed into the brim. As the patient was only 7 months pregnant, and the head could easily be pushed into the brim, it was decided to allow her to go on for another fortnight. Her first labour had been terminated by craniotomy. The patient, unfortunately, did not return at the appointed time, and when labour was induced, one week later than the time set, the head could not be pushed through the brim. Krause's method was adopted and two sets of bougies were used, but the labour was very slow in coming on, taking fully 4 days. As the patient was showing some evidence of exhaustion, manual dilation was resorted to when the os was nearly fully dilated, and forceps were applied, but the head could not be got through in the Walcher position. Craniotomy was done. The child

* Read at a Meeting of the Edinburgh Obstetrical Society, April 13th, 1904.

weighed 5lbs., minus the brains. If this patient had returned at the time stated possibly the head would have come through, but I think I made a mistake in allowing her even a fortnight. It would have been safer to have had her back for examination in a week, but the head came down so easily that I concluded she could safely stand a fortnight more. The patient made a good recovery.

Case II. Mrs. McD., X-para, æt. 33. The obstetric history of this woman is a somewhat remarkable one. Her first three labours were at home, and all the others in the hospital. The first child was born dead, spontaneously, at the 7th month; the second one spontaneously at full time, dead; the third spontaneously at the 8th month, also dead, the next five labours were by induction at the eighth month; the fourth and fifth children lived, the sixth died five hours after birth, the seventh was born dead, and the eighth lived five days; the ninth and tenth labours came on spontaneously at the eighth month, and the children both lived. The present labour was the tenth. The conjugata vera was 3½in.

The patient was admitted for induction of labour, but on the day following it came on spontaneously. Two hours after its commencement the membranes ruptured and the cord prolapsed. The os was fully dilated and the pains strong. During the pains the pulsations of the cord could not be detected, but in the intervals they were quite perceptible, but very slow, only 60. An unsuccessful attempt was made to replace the cord with the patient in the knee elbow position. She was then put deeply under chloroform, and when the uterus relaxed the head was pulled back from the brim by external manipulation through the abdominal wall, and the cord, which was now pulsating strongly, was replaced and the head was pushed well down into the brim. The uterus was then massaged and a firm binder applied. The labour was completed in an hour's time without assistance. The child, a male, was alive, and weighed 6¾lbs. The patient made a good recovery.

Strictly speaking, one can hardly call this an induction case, but the woman's obstetric history is so interesting that it is worthy of record. Ten labours up to the age of 33 is a pretty fair record of itself, but as she has only had one full-time one she has gained at least one month in nine of her pregnancies, which gives her an advantage over ordinary women. I have in several other cases found labour come on spontaneously shortly after the patients have been admitted for induction. The excitement probably has something to do with it.

Case III. Mrs. L., II-para, æt. 20. Conjugata vera 3½in. This patient's first labour had been a forceps one, with a dead child. She was eight months pregnant. Two sets of bougies were used, and after two days, as the patient was beginning to show indications of exhaustion,

chloroform was administered the dilation completed manually, and the delivery effected by forceps. The child, a female, was alive and survived. The mother made a normal recovery.

Case iv. Mrs. G., III-para, æt. 25, conjugata vera 3½in. The two previous labours had been very difficult forceps ones at full time, with live children. The deliveries had been so difficult that the patient was advised to have induction about the eighth month. Bougies were inserted, and on the following day a Barnes's bag, which rapidly induced contractions. The child, a male, alive and weighing 5½lbs., was born by natural efforts. It seemed all right, but on the fifth day it died somewhat suddenly. The mother made a normal recovery.

Case v. S. G., single, III-para, æt. 22, conjugata vera 3¼in. The first child had been born dead without assistance. The second had been delivered by craniotomy. Two sets of bougies were used. The child, a female, weighing 5lbs., was born alive and survived.

Case vi. Mrs. T.,, III-para, conjugata vera 3½in. This patient had had induction successfully performed twice before. Bougies were inserted for 24 hours, and then taken out and eight hours later labour came on and child was born by natural efforts. It weighed 4¾lbs., and was dead. This patient had been under chloroform for the insertion of the bougies. Before the chloroform was given the child was alive, but no examination for the fœtal heart was afterwards made. The patient, however, was positive that she felt no movements after she became conscious. I remember one other case where the fœtal heart was quite strong before chloroform was given, and yet the child was born dead very shortly afterwards. This was a very easy forceps delivery, and there was certainly nothing in the delivery to have caused the death unless it had been the chloroform. I am inclined to think that chloroform may occasionally cause the death of the fœtus *in utero*, but as yet I have no evidence to offer on this point.

Case vii. Mrs. P., III-para, æt. 30, contracted pelvis, c. v. by *post-mortem* measurement 3⅝ inches. On November 1st bougies were introduced. Some hours later the patient's temperature rose to 99·8°F., and then fell to subnormal. On the 2nd it rapidly rose to 103°F., and the bougies were taken out. The labour soon after ended naturally, but the child was dead. An intra-uterine douche was given and the temperature quickly fell to normal, but it rose again to 102·8°F. in the evening. After that it kept up about 102°F., and finally rose to 105°F. on the seventh day of the puerperium, when the patient died. Throughout the lochia remained perfectly sweet, and there was nothing to indicate any septic infection.

The *post-mortem* examination showed that the heart was fatty and enlarged, the right ventricle dilated and thin. The pulmonary orifice was

dilated, but all the others were normal. There were ante-mortem clots in all the cavities.

The lungs were emphysematous, but not consolidated in any way. There was no evidence of peritonitis. The lower 5 inches of the ileum appeared to be slightly congested, but on opening it there were no signs of any lesions of the mucous membrane. The uterus was enlarged, but its walls were quite healthy. The interior contained some dark red pultaceous material, but this was not septic. The spleen was slightly enlarged, but of normal consistence.

Whatever caused the death, it certainly was not septicæmia. The fatty dilated heart probably gave out, but what caused her temperature? I must confess I do not know, neither do I know what caused her child's death. It was not a case of enteric as the Widal reaction was negative and there were no intestinal lesions.

Case III. Mrs. T., æt. 25, III-para, conjugata vera 3¼in. The first child was born at full time by forceps, and lived a fortnight, the second one was born by induction and lived eight months, but then died of diphtheria. On the evening of admission she was prepared for induction, and I intended demonstrating to the students the method of inserting bougies, but during the night labour pains commenced, and in the morning I found the os would admit two fingers, but the pains had ceased, so I introduced the largest Barnes's bag. It was expelled an hour later, and the labour was allowed to go on until the following day, when it was ended by forceps. The child was alive, and weighed 6½lbs. It did well, and the mother made a normal recovery.

In this case I had seen the patient ten days previous to her admission, and after a careful estimate of the size of the head relative to the pelvis had concluded to allow her to go ten days longer. At the first examination the head had not presented, but by external version I had no difficutly in manipulating it round and easily pushing it into the brim.

Remarks. These constitute all the cases in which induction was done in the interests of the child, but there were several others where it was done in the interests of the mother, as for albuminuria and exhaustion from severe vomiting. I have omitted these, as this paper is only dealing with cases of obstructed labour.

In his "Obstetrics," Whitridge Williams says: "At the present time, then, it seems to me that the only rational indication for the induction of premature labour, so far as concerns the existence of disproportion between the size of the head and the pelvis, is afforded by the rare cases in which the pelvis is normal, but the child abnormally large, owing either to excessive development or to an

undue prolongation of pregnancy. If such a condition be diagnosed some weeks before labour, the operation is clearly indicated, particularly in multiparous women who have repeatedly given birth to very large dead children." Pinard considers the operation no longer justifiable, and advocates symphysiotomy at full time, and Bar, likewise, has abandoned it and recommends Cæsarean section at term, if spontaneous delivery does not occur. There can be little doubt that more children will be saved, but I do not believe that even in the hands of expert operators the maternal mortality will be as low as after induction of labour. I think most British obstetricians will agree with me that it is a perfectly justifiable operation in properly selected cases, especially in the hands of general practitioners who can hardly undertake such serious operations as symphysiotomies or Cæsarean sections. In hospitals it will probably be done less frequently in the future, but even there there is a place for it until, at all events, the mortality after the cutting operations has become much lower than at present.

As regards the cases suitable for induction they are practically the same as those for symphysiotomy. I have frequently induced labour with a *conjugata vera* of $2\frac{3}{4}$in., but I am bound to say the results to the children have been far from satisfactory. The great point to decide the matter is the size of the head relative to the pelvis, provided that the child has reached an age at which it will have a good chance of surviving. At 28 weeks a child may live, and I have been able to bring up one at least a week younger than that, but the chances of its surviving are not very brilliant. In fact, to give the child a reasonable chance the 32nd week should have been reached. The nearer full time the better.

If the head will not pass the brim at the 32nd week, I think one should decide upon an operation at full time, preferably Cæsarean section. On the other hand, if the head can easily be pushed into the pelvis, we should wait, seeing the patient week by week, until the time comes, when the head enters the brim with difficulty. Labour should then be induced without delay. The method of judging of the size of the head relative to the pelvis was so recently described to you by Dr. Munro Kerr that I shall not occupy time in going over it. To show the importance of observing the patient I would refer you to the *Scottish Medical and Surgical Journal* of October, 1903, p.p. 291, where I describe a case with a $2\frac{3}{4}$in. pelvis, which I allowed to go to full time with the result of a live child born by natural efforts.

There are certain cases where I am quite sure the vitality of the

prematurely born children is too low for them to survive, although they are well developed and are born without difficulty. I remember one case where I induced labour three times running, and got live and well-developed children, and yet they died in a few days. There was no syphilis in the case. On the fourth occasion I refused to induce labour, and insisted on a Cæsarean section at term, and got a fine healthy child.

Cases of Symphysiotomy.

Case I. Mrs. D., III-para æt. 19, was admitted in labour at full time. Her two previous deliveries had been by craniotomy, and on each occasion the child's head had been firmly ossified. The pelvis was a flat, rickety one, with a c. v. of 3in. The fœtal head overlapped the symphysis considerably.

The symphysis was opened in the usual way, cutting directly down upon it. Forceps was applied, and the head extracted without difficulty, with the patient in the Walcher position. The ends of the bones separated about two inches. The child, a male, was alive, and weighed 7½lbs. The symphysis was easily brought together and several strong catgut sutures were put through the fibrous tissue and the superficial wound was closed with silk worm gut.

The patient made a very good recovery for a week, when she developed bronchitis, which gave some trouble for a few days. A fortnight after the operation she developed incontinence of urine, which was treated by the insertion of a winged catheter for three days. After that there was no further trouble. She was dismissed quite well on the 37th day, able to walk without any inconvenience.

Case II. Mrs. H., V-para, æt. 29, was admitted from the outdoor department after failure to deliver with forceps. All her former children had been delivered by forceps with difficulty, one of them dead. The conjugata vera was estimated at 3¾in. The head was large and would not engage.

Symphysiotomy was performed by my assistant, Dr. Gibson. Considerable traction was required to deliver the child with forceps. It was a female, alive, and weighed 11½lbs. The head was very large and square, the bi-temporal diameter being 3⅝in., the bi-parietal 3¾in., the sub-occipito-bregmatic 4in., and the occipito-frontal 4⅞in.

The patient made an extremely good recovery, and was dismissed quite well on the 31st day.

Case III. Mrs. B., I-para, æt. 24, was admitted after having been in labour for 30 hours. A midwife had been in attendance all night, and the people stated that she had been most attentive and had examined the

patient at every pain. She had ruptured the membranes five hours before the patient was admitted. The os was found to be dilated, and the head presenting but not engaging. It overlapped the symphysis considerably. The conjugata vera measured 3in., the interspinous diameter 8¾in., and the intercristal 8½in., so we had to deal with a generally contracted as well as a flattened pelvis. The case was not a good one for symphysiotomy, but, on the other hand, it was an extremely bad one for Cæsarean section unless one did a hysterectomy. I therefore decided to do symphysiotomy. After cleansing the vagina as thoroughly as possible, I operated in the usual way, but while dividing the symphysis from above downwards I came upon solid bone about half-way down the joint. I was using a heavy Galbiati's knife, and tried to cut through the obstruction, and in doing so turned the edge a little towards the left side to see if it was merely a bend in the joint, as I had once before found in a case. The bone suddenly yielded, and the joint gaped. I found that the bone had given way into the obturator foramen, and at the same time the left ramus had fractured just about the junction of the ischium and pubis. The child was delivered with forceps. It was a female, alive, and weighed 7½lbs.

During delivery the fractured end of the ramus caused a laceration into the vagina. The symphysis was brought together in the usual way, and also the fracture. To ensure drainage I plugged the vaginal tear with iodoform gauze. Contrary to my expectations the patient made a fairly good recovery. There was moderate pyrexia for a few days. The sinus was washed out carefully and the packing renewed daily for about a week. The patient was dismissed well on the 42nd day. The fracture had united, and there was a fair amount of callus, but nothing excessive. If this woman should come under my care again at full time, I think, I shall do a Cæsarean section.

Case iv. Mrs. M., III-para, æt. 30. This patient's previous labours had resulted in dead children, the second one being at the 7th month by induction, I think. She was sent in by my colleague, Dr. Munro Kerr. The conjugata vera was 3½in. The os was fully dilated.

I operated at once. The child, a female, weighing 8½lbs., was delivered alive with forceps, the patient being in the Walcher position. There was a good deal of tearing of the soft parts, and the bleeding was very free. I found the distal end of the urethra had torn away from the vagina. I was extremely lucky in getting a catheter into it at once, as it had retracted a considerable distance into the wound and could not be seen. I pulled it down and stitched it in position again. The symphysis was then closed and the wound firmly plugged with iodoform gauze to check the bleeding. The catheter was tied in and left for three days. After a couple of days the gauze packing was replaced by a drainage tube. There

was some febrile disturbance for a few days, but the progress was satisfactory.

Remarks. I doubt very much if the operation of symphysiotomy will ever become a favourite one in this country. Personally I am not very much taken with it. I have now performed it six times successfully so far as the mothers were concerned, and with the loss of one child. In two of the cases the hæmorrhage was very severe, and in nearly all there was considerable laceration of the soft parts. It is impossible to prevent this laceration if you require much separation of the joint to allow of delivery, as the soft parts in the front are quite unsupported. In primiparæ this is especially the case, and they are much less suitable for the operation than multiparæ, who have relaxed vaginæ. Another drawback to the operation is the subsequent nursing of the case. To get union of the joint the patient must be kept lying very still, and this is no easy matter, when her wants have to be attended to. The case is worse than a fractured pelvis, because the lochial discharge as well as the ordinary wants of nature have to be attended to. I know the nursing staff would sooner attend to three cases of Cæsarean section than one of symphysiotomy. Again, the length of convalescence required is at least two weeks greater than after a Cæsarean section.

There is no doubt that there is a slight permanent increase in the size of the pelvis, and subsequent deliveries may be accomplished by forceps. In my first case this was so, but I have not had an opportunity of testing this in any of the others.[1]

As to the length of the conjugate to which the operation is applicable, it works out very much the same as for induction of labour, and, roughly speaking, one may say that 3in. is about the lowest limit, but the relative size of the head must always be borne in mind.

Cases of Cæsarean Section.

In the following 10 cases Cæsarean section was performed. In two of the cases, which I shall give first, supra-vaginal amputation of the uterus was also done, and in both of these the children were dead before operating. The first case was done for extensive cancer of the cervix and the other 9 for markedly contracted pelves.

Case 1. Mrs. C., VI-para, æt. 35, conjugata vera normal. Until within 8 weeks of the time of admission the patient had not had any

[1] Since this was written I have delivered by forceps a woman who has had symphysiotomy performed in her last two confinements. The child was saved, although the cord was prolapsed before the patient was admitted.

symptoms of special significance. From then she had been troubled with pretty severe pelvic pain of a radiating character, and a reddish vaginal discharge. During the last week she had had several severe attacks of bleeding, and the doctor who had sent her in said that she had lost about 30 ounces of blood that evening. She was near full time.

On examining her I found she was a very stout woman, somewhat anæmic from the loss of blood. There was no fœtal heart to be heard. Fœtal movements had ceased for 3 days. A vaginal examination revealed that there was a large cancerous mass involving both lips of the cervix and extending out on to the vaginal wall, especially on the left side. The greater mass was in the anterior lip. The cervical canal admitted the finger, and the cancer was found to implicate the entire cervix, which was from 2½ to 3 inches in length. The head presented. There was some slight bleeding during examination.

It was quite evident that it was impossible to remove the entire cancerous mass, as it extended too far out on the vaginal wall, but after considering the case fully, I decided to operate at once and remove the uterus supra-vaginally, and thus control the hæmorrhage. It might have been possible to have scraped away the cancer to a sufficient extent to have allowed of delivery by craniotomy, but in doing so I was afraid the bleeding might cause the patient's death. As the child was dead there was, of course, no necessity of considering it.

On incising the thick abdominal wall there was no bleeding. I was so struck with this that I thought the patient must have died, but she was breathing well. There was the same bloodlessness in the uterine incision. I left the placenta in the uterus, cutting the cord off short, and as there was no bleeding did not apply clamps or an elastic ligature round the uterus. The cancer had spread upwards into the lower uterine segment, so the amputation incision passed through cancerous tissue. The stump was stitched and the peritoneum closed over it. The pelvic glands, especially on the left side, were deeply involved. The loss of blood was extremely small. A quart of normal saline solution was left in the peritonéal cavity. The child weighed 9½lbs.

The after progress of the patient was satisfactory, but during the third and fourth weeks there was feverishness partly from absorption from the cancerous mass, but also from the sloughing of a burn on the thigh caused by a hot water bottle after the operation. The patient suffered no pains in the pelvis, and the cancerous mass shrunk to a certain extent. She went home on the 28th day, and was still alive two months later, but I am afraid she could not survive much longer.

Case II. B. S., an unmarried rickety dwarf, æt. 23, c. v. 1½in., was brought into the hospital from the country. She had been in labour for a

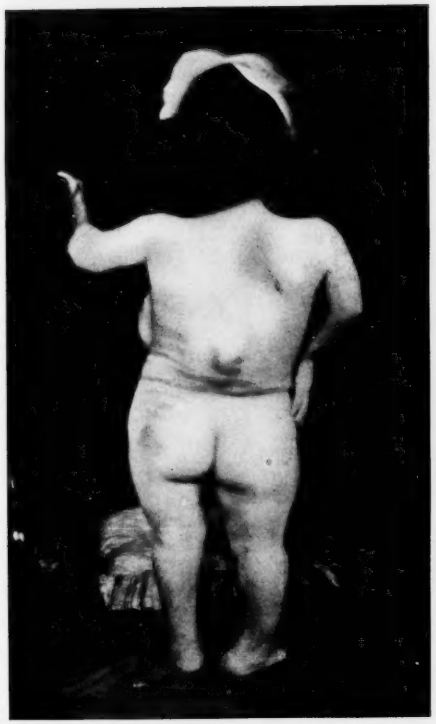

FIG. I.

FIG. II.

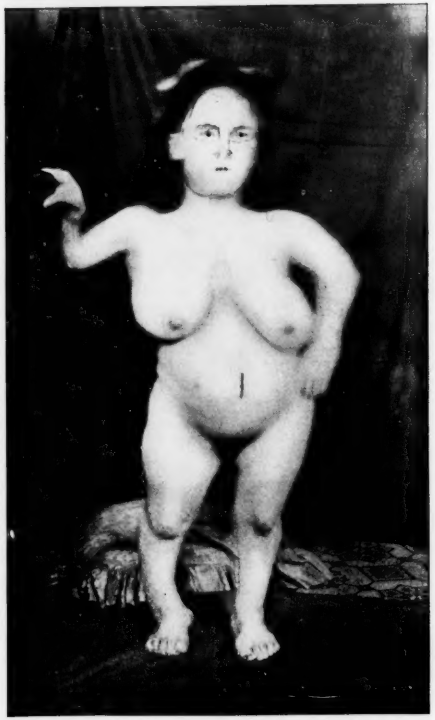

FIG. III.

From photographs taken before dismissal. The chair she is holding by was 2ft. 9in. in height.

considerable time, and the cord was prolapsed and quite pulseless. The patient was 3ft. 7½in. in height and very markedly deformed, as will be seen from her photograph (see Figs 1, 2, and 3). The conjugata vera was a little over an inch and a half. Even with a dead child, craniotomy was out of the question, so there was nothing for it but an abdominal section, although the patient was anything but a good subject. As the chances were that the uterus was septic, I determined to amputate it. I operated as soon as she could be prepared. There was very little blood lost during the extraction of the child, and none afterwards, as I at once clamped the uterus low down. The ovaries were both healthy, so I left them. The patient stood the operation well. She had a somewhat febrile recovery, and developed a couple of stitch abscesses, and later on a large abscess under the outer edge of her right breast, which burrowed under the scapula and pointed in the back.

Case III. Mrs. P., æt. 27, II-para, c. v. 2½in. Just 10 months previously this patient had been delivered in the hospital of a 4½lb. child by craniotomy after a midwife and a doctor had failed to deliver her at her home. She was extremely rickety, with a true conjugate of barely 2½in.

When she was about three months pregnant this second time I saw her and advised her to have Cæsarean section done. She was to have come to the hospital on June 1st, but did not turn up; however, on the evening of that day she sent me word that she was having pains. According to her dates the labour was not quite due. I saw her at her home, and found the os was beginning to dilate, so at once sent her into hospital to be prepared for operation. I noticed that she was very stout, but, as she was fully dressed, I did not palpate her abdomen, so did not diagnose twins.

Two hours after admission I operated. Just as I was about to begin the abdominal incision she stopped breathing. The tongue was pulled forward and artificial respiration commenced, but there was no effort at gasping, so I quickly opened the abdomen and cut into the uterus. The placenta was situated anteriorly, and the first sweep of the knife was followed by a large spurt of blood, and the patient at once gave a gasp. The uterine incision was quickly enlarged and a child removed, and I then found there was a second one. Both children, males, required to be resuscitated. They each weighed 4½lbs, and were so much alike that afterwards nobody could tell which had been born first. If they had been children of aristocratic parents, and had survived, I am afraid there would have been difficulties in settling the point. As it was, the registrar was very indignant that we could not tell which was the elder of the two. I advised the nurse to tell him that according to Shakespeare they were

never born at all, but were, like Macduff, from the "mother's womb untimely ripped." I do not know how he settled the point.

The patient breathed quite well after the uterus was emptied, and gave no further trouble. The operation was finished in the usual way, and as the woman wished it I tied and cut her tubes.

The children seemed to thrive for two weeks, and then they suddenly began to pine, and one died on the 18th and the other on the 21st day.

I had once before had the unpleasant experience of failure of breathing just as I was beginning the uterine incision, and in Case v. the same thing happened. In all of these cases the abdomen was very tense. In the first case artificial respiration was kept up for some minutes, and I thought the patient was dead, so quickly opened the uterus to save the child. The mother then breathed at once. In the other cases I did not wait any time, but went on with the operation, while the assistants were doing the artificial respiration. The free flow of blood helps the circulation by relieving the engorged heart, and the relief of pressure upon the diaphram allows of free play to the lungs. In cases of great distension I think it would be advisable to rupture the membranes immediately before beginning the operation.

The patient made an uninterrupted recovery.

Case iv. Mrs. H., æt. 27, I-para. This patient was admitted after having been in labour for 12 hours. The conjugata vera measured 2¼in. She was at once prepared for section. The membranes ruptured before the operation. There was nothing to be remarked about the operation except that the uterus remained very flabby and did not retract well until it was replaced in the abdomen after it was sutured. The Fallopian tubes were not tied. The child, a female, was alive, and weighed 5¼lbs.

The patient made an excellent recovery except that there was a stitch abscess, which, however, healed quickly.

Case v. Mrs. O., II-para, æt. 25. Conjugata vera 2¼in. This patient's first labour had ended in a craniotomy. She was very rachitic, being only 4ft. 2in. in height. Her intercristal and interspinous diameters were the same, 9¾in., and the diagonal conjugate 3in. She had suffered from chronic bronchitis for many years, and was in the hospital under treatment for this for 11 days before the operation was done. I was anxious to operate upon her during daylight, as I have found that in operating at night with the gas burning right over the table there is a good deal of decomposition of the chloroform, which causes bronchial irritation. On examining her on a Friday I found the os was patent, although there had been no pains, so I had her prepared for operation on the Saturday morning. During the night the

pains came on. On the Saturday morning there was, unfortunately, a very dense fog, but as labour had commenced I was forced to proceed with the operation under the worst possible conditions for the patient. She took the chloroform badly, and just as I began the abdominal incision she stopped breathing and seemed to be dead. The tongue was pulled forward and artificial respiration begun while I went on with the operation. As soon as the uterus was opened breathing commenced, and we had no further trouble. Her tubes were tied and cut. The bronchitis was bad for several days, but otherwise the recovery was uneventful. Her baby, a girl, weighed 7¼lbs., and she was able to nurse it.

Case vi. Mrs. C., II-para, æt. 22, conjugata vera 2¾in. The first delivery had been by craniotomy. The pelvis was generally contracted as well as flattened. She was admitted in labour and was operated on at once. The membranes were extremely adherent, and to get them away I inverted the uterus through the incision. I did not tie her tubes. The child, a boy, weighed 7¾lbs., and she was able to nurse it. Her recovery was uneventful.

Cases ii., v., and vi. were all operated on within 14 hours.

Case vii. Mrs. H. V-para, æt. 35. Conjugata vera 2¾in. This patient's first child had been born at full time, dead, either by forceps or craniotomy; her second, at full time, dead, a breech, craniotomy on after-coming head; her third at the 7th month, dead, by forceps; and her fourth at full time by craniotomy. With such an obstetric history it was time for a Cæsarean section. Labour commenced on the day following admission. The operation was done as soon as possible after the pains commenced, but the membranes ruptured about an hour before I began. The only point to be noted about the operation was that the membranes were extremely adherent. To get them cleared off I inverted the uterus through the wound. The upper half of the abdominal incision was protected by a large gauze swab between it and the uterus. The report says the tubes were not tied, but I have an impression they were. The child, a boy, weighing 9¾lbs, was alive. Three hours after his birth pus was observed to be streaming from one of his eyes, although a 2 per cent. silver nitrate solution had been instilled. It was a very typical case of ophthalmia neonatorum, and the infection must have occurred *in utero*. When I discovered this I had grave doubts of the mother's recovery, and was not astonished to find her temperature rise to 101·2°F. It remained about that height for five days, and then gradually came down to normal. There was a great deal of abdominal distension. On the sixth day I washed out the uterus and dressed the abdominal wound. The wound seemed to be healing nicely, and there was no redness with any of the stitches. Two days later some discharge was found at the edge of the

dressing, and on removing it the lower half of the wound was found to be sloughing very badly. The stitches were all removed and a wet dressing applied. The patient's temperature was now normal. On examining the parts carefully next day I found the upper half of the wound healed, but the lower half gaping fully an inch wide and sloughing badly. Towards the left a sinus ran downwards and outwards for fully three inches. There was also some undermining at the lower edge of the wound. The floor of the cavity was formed by the anterior uterine wall, and the catgut sutures were still present. The uterine incision was firmly healed. The portion of the abdominal incision which had sloughed exactly corresponded with the part which the inverted uterus had come in contact with. When the slough had separated I dressed the part with strips of iodoform gauze plugging steeped in Hey's wash. The parts soon took on a healthy action and gradually closed, but it took two months before this was completed. The patient was very well when she left the hospital, and her temperature was never above normal after the stitches had been taken out. The ophthalmia subsided after a few days' treatment, and the baby throve well.

The whole of the anterior wall of the uterus was firmly adherent to the abdominal wall. If she should require another section it can easily be done extra-peritoneally.

Case vii. Mrs. G., I-para, æt. 25, conjugata vera 2½in. There was nothing to note about this operation. The tubes were not tied. The baby, a girl, was alive, and weighed 5¾lbs. The recovery was uneventful, the temperature remaining normal throughout. The child throve splendidly.

Case ix. Mrs. A., æt. 26, III-para, conjugata vera 2¾in. This patient's two previous children had been delivered dead by craniotomy, I think. Both she and her husband were anxious that I should sterilise her, if the baby was alive and healthy. The child, a boy, weighed 8lbs., and to all appearances was a splendid specimen. Several of the men present at the operation remarked this. I, therefore, tied and cut the tubes. The patient made a perfectly normal recovery. On the second day the baby became intensely jaundiced, and died on the following day. A *post-mortem* examination did not reveal anything except that all the organs were bile-stained and the liver was enlarged.

Case x. Mrs. M., æt. 23, II-para, conjugata vera 2¾in. This patient's first child had been delivered by craniotomy. She was sent into the hospital from some distance in the country in labour. The os was nearly fully dilated, but the pains were not very strong. A hypodermic injection of $\frac{1}{6}$gr. of morphia was given to lessen the pains while the abdomen was being prepared for section. The membranes had ruptured before the operation was commenced. There was nothing to note in the

operation except that the uterus remained very flabby until it was returned into the abdomen. The child, a female, weighed 6½lbs., and throve well. The mother's tubes were not tied. The recovery was uneventful.

Remarks. In performing the operation the method which I have adopted is to make an abdominal incision of about 5in. in length high up, so that about two thirds of it lies above the umbilicus, and then to incise the uterus longitudinally in the middle of the anterior wall so that the top of the incision will be at the fundus. I generally use Cameron's pessary to prevent bleeding from the uterus while incising it. The child is delivered by grasping one leg. The old notion of the incision grasping the aftercoming head is fanciful. I have only once experienced difficulty in delivering the child, and that was in a case where the membranes had been ruptured, and the retraction ring had grasped the child round the neck. It required considerable force to dislodge the head. In nearly every case the child requires to be resuscitated. This may be partly due to the chloroform, but I think the sudden reduction of temperature in the uterus when the abdomen is opened may so stimulate the child as to cause it to make inspiratory efforts and thus draw liquor amnii into its lungs. I have more than once emptied several ounces of liquor amnii from the lungs by inversion of the child.

As regards the position of the placenta it has been on the anterior wall in nearly nine-tenths of my cases. In the 10 just recorded I came either directly on to it or on to its edge in every one of them except in case 1 where it was on the posterior wall. When it is in the anterior wall the hæmorrhage will be a little greater, but it can be easily controlled. As a rule, the hand is not passed through the placenta, but round its edge by stripping it off.

In all of the cases recorded I used catgut sutures for the uterus, and silk to tie the tubes. I have tried silk and also celluloid thread for the uterine sutures, but in many of the cases the sutures worked out long afterwards and gave great trouble to the patients. When catgut is used it should be tied very firmly, as there is risk of it becoming untied. I have known this happen and cause the patient's death from hæmorrhage. The sutures do not include the mucous membrane.

The uterine incision I have always practised is a high longitudinal one. The fundal incision I have never taken to, and after a case I saw recently in the hands of my colleague, Dr. Munro Kerr, I have less love for it. The patient had not been sterilised, and just at the onset of labour in the next pregnancy the old wound

gave way and the intact ovum was extruded through the fundus into the abdominal cavity. The uterus had retracted well and there was little bleeding. The patient recovered after hysterectomy, but the child was, of course, lost.

The operation is usually done after labour has commenced, but one need not wait for the actual labour pains. I have several times operated before active uterine contractions had commenced. In such cases, if the uterus is to be left, the os should, of course, be sufficiently dilated to allow of free drainage. The woman is thus saved the exhaustion of labour, and one can select a suitable time for the operation during the day instead of being hurriedly called perhaps in the dead of the night.

In suitable cases Cæsarean section is an operation which may be done with comparatively little risk if proper aseptic precautions are taken. If the cases can be admitted a few days before full time so as to have them properly prepared for operation one may confidently expect a good result, but, unfortunately, many of the patients are only admitted after labour has been going on for a considerable time. The risk in such cases is greatly increased, especially if the patient has been repeatedly examined in the usual haphazard way without proper aseptic precautions. I have never lost a case which I have had under observation for a few days prior to the operation, and I now make a rule not do a section if the patient has been repeatedly examined prior to admission, unless there is an absolute indication, as in case 2, and then the uterus should be removed. I remember one case which was admitted after several examinations had been made by a midwife and two doctors. The child was alive, but I decided to do a craniotomy. By the second day the patient had developed violent sepsis, and I am quite sure that if section had been done and the uterus left, the patient would have been dead within 48 hours. If there is any septic vaginal discharge the uterus should be removed.

The question of sterilising the patient is a very important one. In this series of cases I tied and cut the tubes when specially requested, to prevent future pregnancies. If the husband and wife are both desirous of having this done, I think one is perfectly justified in doing the operation, and as these patients are usually very prolific it comes to be a serious business for a woman to require such a major operation, say, every 2 years or so. I have not yet had to repeat the operation, but in the event of having to do so, I think, I shall take steps to prevent any future pregnancies. Tieing and cutting the tubes I have found quite effectual, and it should be

so, if it is properly done. Some operators advocate the removal of the uterus in all cases in which it is advisable to sterilise the patient. Herman advocates this, and says, "except for child-bearing the uterus is useless; it is liable to disease, and it menstruates, which is a monthly illness." He also advocates the removal of the ovaries because they "may become cystic." It is true that child-bearing is the chief function of the uterus, but I do not believe that this is its only function. To call a strictly physiological process like menstruation an illness seems to me to be as unscientific as to urge as a reason for removal of the uterus and ovaries that they may become diseased. To unsex a woman in the prime of life is an unjustifiable proceeding, unless the step is rendered necessary by disease. If the removal of the uterus will lessen the risk of the operation then it should certainly be removed, as was done in cases 1 and 2, but in ordinary cases it should be left. If the ovaries are healthy one or both should be left.

On Cancer of the Cervix after Supra-vaginal (subtotal) Hysterectomy for Fibroids.

By J. Bland-Sutton, F.R.C.S., *Surgeon to the Chelsea Hospital for Women; Assistant Surgeon to the Middlesex Hospital.*

This paper is written in pursuance of what should be considered a duty incumbent on all those surgeons who are practically interested in hysterectomy, for its object is to record two cases in which, after the performance of supra-vaginal hysterectomy for fibroids, squamous-celled cancer occurred in the cervical stump. This is a subject of great importance, because some writers urge that when it is necessary to remove the uterus for fibroids, it is in the patient's best interest to remove the neck of the uterus also (panhysterectomy), in order to protect her against the occurrence of cancer in the cervical stump.

This matter, which has attracted much attention in France, especially by the writings of Richelot, has not escaped attention in England, for it has been critically considered by Doran, in his *Harveian Lectures*, 1902. The importance of recognising malignant disease as a sequel of supra-vaginal hysterectomy cannot be denied. The subject presents itself for consideration in three phases:—

1. A distinction must be drawn between sarcoma and carcinoma of the stump.

2. The disease may have existed in the cervix at the time of the primary operation.

3. It may occur subsequent to the operation.

This communication is concerned only with cancer of the cervical stump. It is by no means uncommon for a woman known to have fibroids in her uterus to lead a tolerably comfortable life, in spite of fairly profuse and even long-drawn-out menstrual periods. Occasionally a patient of this kind suddenly experiences a marked increase in the flow, or has what she terms a "flooding," is alarmed, and seeks advice. Cases of this kind require careful consideration, for this alteration in the symptoms may indicate changes in the fibroid, or the supervention of cancer. If the patient is a spinster, or married but barren, there may be concurrent cancer of the body of the uterus. If married and fertile the co-existence of cancer of the cervix must be considered, and it is well to bear in mind that an early cancer a short distance up the cervical canal will give rise to bleeding and escape detection by the examining finger. This is illustrated in the following record:—

In 1901 I saw a married patient, 49 years of age, in consultation with Dr. Kockmann on account of excessive menstruation, which we supposed to be due to uterine fibroids. It had long been known that this patient had fibroids in her uterus, but they had caused very little inconvenience until some few months before I saw her, but recently the menorrhagia had become so marked as to render surgical interference desirable. I performed abdominal hysterectomy, October 22, 1901, and at the express request of the patient removed only one ovary and Fallopian tube (the right). The whole of the cervical canal was excised, but I left two thin flaps of the vaginal portion of the cervix. The patient recovered and went into the country. Three months later she complained of recurrence of the bleeding; this puzzled me, and I asked for an examination. To my great distress I realised that the vaginal vault was thoroughly infiltrated with cancer. This opinion I subsequently substantiated by an examination under an anæsthetic and a microscopic examination of a piece of the growth. The patient being rich, passed from one consultant to another, and after a trial of Schmidt's serum died April 6, 1903, from uræmia. Fortunately, the parts removed at the primary operation had been preserved by Dr. Kockmann, and they were carefully examined and reported upon at the London Hospital. From this "report" the following extract is made.—

Naked-eye appearance of uterus and fibroids removed by Mr. Bland-Sutton. They consisted of (1) "The body of the uterus, in which was present a large submucous myoma, several small, peritoneal myomata, and interstitial myomata the size of walnuts."; (2) "The cervix of uterus: the os uteri has an irregular shape, and is eroded. The substance of the cervix immediately surrounding the canal near the os is soft and readily breaks down. Within the muscle tissue of the cervix is a small myoma undergoing calcification."

Microscopic examination of the os uteri removed at operation. This shows undoubted epithelioma; the growth is of the ordinary variety, it had penetrated to a considerable degree into the muscular walls of the cervix; typical pearls are seen, as well as outlying chains of cells in the more distant lymphatics. The epitheliomatous growth is accompanied by an inflammatory reaction which is not excessive. In some places the growth had penetrated the glandular cysts, bringing about a destruction of the columnar cells of the latter. Little breaking down of the cells of the epithelioma is to be seen."

It is quite clear from this independent report that an early unsuspected squamous-celled cancer existed in the cervical canal at the external os at the time of the primary operation in October, 1901,

and I may add: although panhysterectomy was performed in ignorance of this, it failed to exercise any influence for good on the progress of the disease.

The second case is instructive in another way:—In February, 1901, Mr. A. E. Rook, of Eastbourne, asked me to operate on a patient aged 42 years and mother of one child 18 years old, on account of a large abdominal tumour, suspected to be a fibroid, which had undergone some change and rendered her gravely ill. The patient's abdomen was occupied by a lump as big as a uterus at the eighth month of pregnancy; this lump was very tender and the patient appeared to be in a serious condition. Pulse 116 per minute and the temperature 102°.

An operation was decided upon without delay. By means of a very free incision, a large tubo-ovarian cyst, reaching as high as the liver, was exposed; as it had a very broad connection with the uterus, and this organ contained an interstitial fibroid as big as a cricket ball, it was decided to make the operation a safe one by removing the body of the uterus with the tumour. In addition the left Fallopian tube had been converted into a hydrosalpinx of the size of a man's fist, so there were no particular indications to be too conservative in dealing with the case. When the huge right cyst had been removed we found it to be filled with offensive pus, and the cut section of the cervix showed me that the uterus was septic also. Under these conditions I adopted the precaution of stitching the flaps of the cervical stump to the lower angle of the abdominal incision. This proved a wise decision for an abscess formed in it and gave much trouble. In spite of this the patient made a good recovery under Mr. Rook's care.

In September, 1902, Mr. Rook asked me to see the patient on account of some bleeding from a suspicious ulcer on the vaginal aspect of the cervical stump. I soon decided that this ulcer was a squamous celled cancer, and without any delay and with very little difficulty enucleated the stump by the vaginal route. Recovery followed quickly and uneventfully, and the patient allowed Mr. Rook to examine her in February, 1904, and he reports to me that "the local condition is perfectly satisfactory." The roof of the vagina was soft, freely movable, and the patient's general condition excellent. The cervical stump was examined microscopically and found to be the seat of a typical squamous-celled cancer.

The occurrence of cancer in the cervical stump after supra-vaginal hysterectomy for fibroids is a matter which requires the fullest consideration. All cases should be carefully recorded in order that it

may be determined whether cancer occurs more frequently in women who have submitted to this operation than in other circumstances. It is no argument that it is advisable to remove an organ for fear that it may become cancerous. It is quite certain that a uterus may become the seat of cancer after bilateral ovariotomy, but this is no valid reason for excising the uterus when both ovaries require ablation.

LITERATURE.

RICHELOT. De la dégénérescence maligne du moignon cervical aprés l'hystérectomie subtotale: remarques sur la myomectomie. *La Gynecologie*, Paris, October, 1903. (In this paper he records three cases under his own care and epitomizes the recorded, and refers to many unrecorded cases mentioned to him by contemporaries.)

DORAN. *Harveian Lectures*, London, 1902. (At the end of the third lecture there is a critical summary of this important subject.)

On Two Cases of Abdominal Pregnancy.

By John Benjamin Hellier, M.D. (Lond.), *Hon. Obstetric Physician to the General Infirmary at Leeds, and Lecturer on Diseases of Women and Children in the Yorkshire College.*

I.

A case of abdominal pregnancy secondary to partial rupture of tubal gestation sac; abdominal section 15 months after conception and 8 months after death of fœtus.*

Summary. This patient had seven months amenorrhœa with signs of pregnancy, and was confined to bed with pain and symptoms attributed to "inflammation." The pain subsided and the health improved, and menstruation recommenced and became excessive; eight months later a dead fœtus was removed by abdominal section from the peritoneal cavity, together with a tumour which arose from the right oviduct and contained the placenta. The fœtus was closely covered by an amniotic sac, which was connected with the tubal tumour. Recovery without complication. Photograph of specimen reproduced in Fig. I.

Clinical history. B.O., married, aged 30, was admitted into the Leeds Infirmary on September 10th, 1903, for abdominal tumour; she stated that her father died of phthisis and her mother of cancer of the breast. She herself enjoyed good health till the present illness. She had a still-born child eight years ago, a living child six years ago, and another a year later; after this she had no pregnancy till 13 months before admission. Then she ceased to menstruate and had signs of pregnancy; she suffered much from vomiting and severe abdominal pain. She says that she was confined to bed for three months, and was supposed to have inflammation, the body being swollen and the pain severe. Subsequently the pain subsided, the abdomen became less swollen and menstruation recommenced after seven months amenorrhœa. She was now able to get up and felt well, but sought advice for menorrhagia. On admission she was found to be in good condition with florid complexion and healthy aspect. Heart, lungs and kidneys normal.

Abdominal examination. The walls were fairly thick, the abdomen was somewhat prominent, especially on the left side; on palpation a somewhat hard and irregular swelling was felt extending

* Case communicated to the Obstetrical Society of London, October 7th, 1903.

from the pelvis to the level of a point half way between the umbilicus and the sternum. At its upper part it lay principally to the left of the median line, but it occupied a more central position below. There was a small hard nodule at the navel. The upper part of the tumour seemed to be in some degree differentiated from the pelvic part and was harder. The tumour was somewhat mobile, but the lower part was more fixed. There was dulness over the tumour, but the flanks were resonant. No tenderness on pressure or pain on manipulation.

On *vaginal examination* the cervix appeared to be of normal consistence and not unduly patulous. In the anterior fornix a rounded tumour could be felt lying in front of the uterus. It was continuous with the pelvic portion of the abdominal tumour. To the touch it was soft and somewhat elastic.

Operation, September 12th, 1903. The patient was anæsthetised with ether. On exploring the abdomen by a median incision a dead extra-uterine fœtus was exposed directly the peritoneum was opened. It lay with the head above and the back behind; the knees flexed on the thighs and the thighs on the abdomen. The nodule which had been felt at the navel was the right knee. The fœtus was compressed by a tightly-fitting capsule of membrane, which was semi-transparent and which seemed to be the amniotic sac. There was no liquor amnii. The arms were bound down to the sides and the features were flattened out as appears in Fig. I. The sac had adhesions externally to the mesentery and omentum. These adhesions were separated without difficulty, some being ligatured and a portion of the omentum removed. On drawing the fœtus out by the upper end the legs became extended, the amniotic sac giving way around the waist. It was then found that the right foot was attached to a pelvic tumour which lay in the utero-vesical pouch and on the right side. This was enucleated rather easily, some adhesions being broken down and some tied and divided; these last included some processes of the broad ligament, but the tumour was not *in* the broad ligament. There was not much bleeding, but there was a little general oozing from the site of some of the pelvic adhesions. A glass drainage tube was left in the pouch of Douglas. The abdominal wound was closed with continuous catgut suture of peritoneal edges, and interrupted silk-worm gut sutures through skin and muscle, a few interrupted catgut sutures being used to make the edges of the aponeurosis meet accurately. There was not the least suggestion of any septic process in the abdomen or in the parts removed. The fœtal tissues seemed rather brittle. The fœtus was removed with the pelvic tumour hanging from its foot, and this tumour contained the placenta.

After history. The patient made a rapid recovery without complications. No vomiting after operation. No morphia needed. Tube removed on the fourth day; union by first intention. The temperature was practically normal from the third day onwards. Sent to convalescent home on October 3rd.

Description of parts removed. The fœtus is a male with well-formed genitals; weight, 2lbs. 7ozs.; length, 12½ins. It corresponds to between 25 and 28 weeks development. It is free from deformity and must have been dead for some months. It is enveloped as far as the waist in a membranous sac which fits closely over head and trunk, binding the arms closely to the sides, and in the face flattening the features; this sac appears to be the amnion. There is no liquor amnii but the sac can be reflected without difficulty from the skin of the fœtus. The legs are now extended, and the front of the abdomen and thighs are not covered by amnion, and the skin here is redder and softer than in the parts immediately beneath the amnion. On flexing the legs and thighs the continuity of the amniotic sac is restored and it is seen to be continued over the buttocks and the rest of the fœtus. A stump of umbilical cord hangs from the umbilicus; the cord was torn when the legs were extended during the extraction of the fœtus. The pelvic tumour has the appearance of a distended oviduct and is about the size of a closed fist. The fimbriated extremity of the oviduct is clearly seen, and the outer two or three inches of the oviduct can be traced in the wall of the tumour at the upper and inner part. The right foot of the fœtus is embedded in the upper side of the tumour, but by a little dissection it is easy to see that the foot has an amniotic investment and that it is really outside the main capsule of the tumour, although embedded in an invagination thereof. With a little force it could be drawn out and separated. The continuation of the umbilical cord enters the tumour near this foot. A probe passes two or three inches along the oviduct and then enters the substance of the tubal sac. On section there is a well-marked capsule with which the amnion is blended above. The section of the tumour is uniform, reddish in colour, fibrous, and somewhat granular looking. The contents of the sac are the placenta in an altered and degenerated condition.

On microscopic examination the substance of the tumour shows fibrous tissue with remnants of chorionic villi and some calcareous particles. The sac wall, according to the report of the pathological committee of the Obstetrical Society is made up partly of the ampullar end of the tube, but mainly of new fibrous tissue. The case is an example of tubo-abdominal pregnancy.

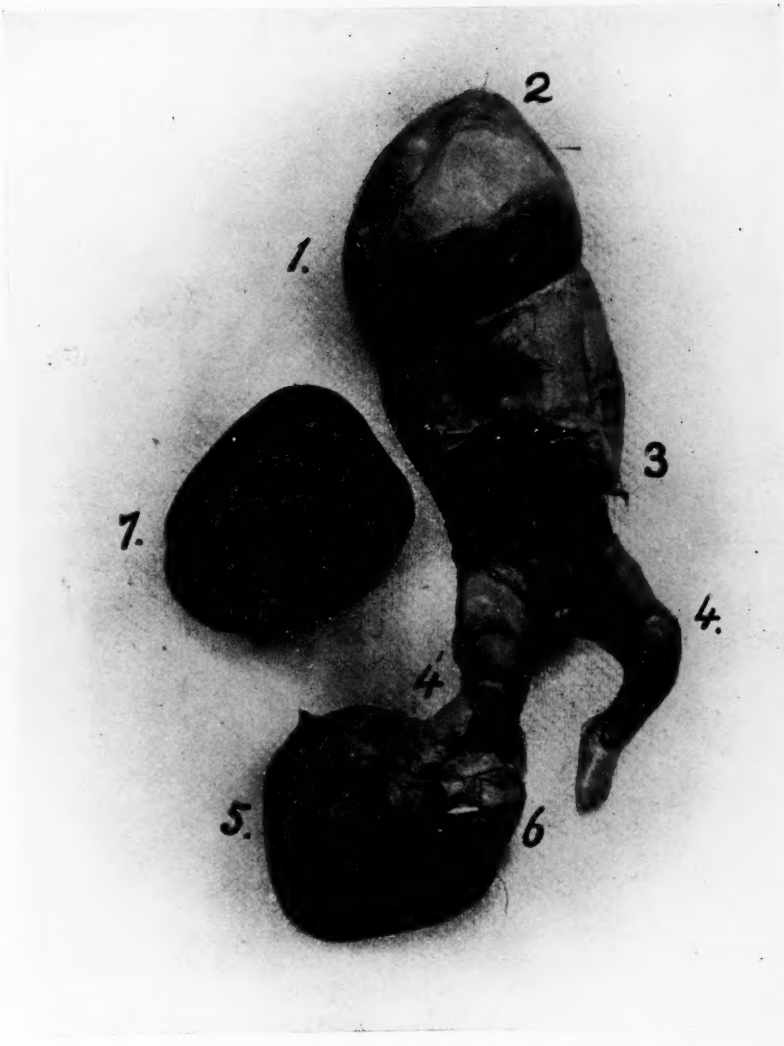

FIG. I

DESCRIPTION OF FIG. I.

1, 2, 3. Upper half of fœtus covered by amniotic sac.
3. Shows left hand and torn edge of amnion.
4, 4.[1] Show continuation of amnion.
5, 6. Tubal sac.
6. Shows dorsal end of oviduct, a white probe is placed in ostium abdominale. Two small flaps of capsule are pinned open to show foot.
7. Posterior half of tumour to show section. Note capsule.

This case may be compared with a very similar one communicated by Mr. Lawson Tait to the London Obstetrical Society in 1892, and which is quoted by Mr. T. W. Taylor in his valuable work on "Extra-uterine Pregnancy" (London: 1899, p. 57). The present case is a further illustration of the fact that intra-ligamentous rupture is not a necessary condition of secondary abdominal pregnancy, as Mr. Taylor well points out.

II.

A specimen of uterus with rudimentary horn from a case where abdominal pregnancy occurred 19 years before.

The patient from whom this specimen was obtained has recently died in the Leeds Infirmary from strangulated ventral hernia. I am indebted to my colleagues, Mr. Littlewood, who had the case under his care, and Dr. Wardrop Griffith, who made the *post-mortem* examination, for the opportunity of examining the specimen and recording the case. Dr. Braithwaite has also given me information concerning the operation. At a meeting of the Obstetrical Society of London, January 13, 1886, Dr. James Braithwaite published "A case of gastrotomy for extra-uterine gestation in which the placenta never came away" (Trans. Obstet. Society, vol. xxviii., p. 33.) The operation was performed in December, 1884. The fœtus, which was full-grown, had been dead about 3 weeks. We quote Dr. Braithwaite's description of the operation. "It turned out that the fœtus was quite free in the abdominal cavity, except that a fine transparent membrane appeared to shut off the intestines above from the fœtus below. There was, however, nothing of the kind visible in the lower part of the abdominal cavity. The large placenta fitted the top of the uterus like a cap, and was spread out on its posterior surface and the neighbouring parts. The wound was closed except at its lower

angle, where the funis was left hanging out, and also a drainage tube . . . The recovery was perfect, but rather slow. The curious and, I believe, unique point in the case was that the placenta never came away, except a morsel about 20 grains in weight, which protruded at the upper angle of the wound on the 6th day." Mr. Knowsley Thornton, commenting on the paper at the time, said that if the placenta had really been absorbed by the peritoneum, it was one of the most remarkable pathological facts ever recorded. Some discussion on the probable fate of the placenta followed. Fourteen months later Dr. Braithwaite made a bimanual examination, and could find no indication of the existence of the placenta except a small ring of dense tissue behind the uterine fundus. The patient at the time of operation was about 43. She had borne living children previously, but had no further pregnancy after this operation.

The patient was admitted into the Leeds Infirmary on February 6th, 1904, at the age of 62, suffering from strangulation in a large ventral hernia. She was in a bad condition, and in spite of immediate operation she died on February 8th. At the *post-mortem* examination various adhesions were found round and about the old abdominal wound and the hernial region. The pelvis, however, seemed normal; no trace of the old gestation or of the placenta was found, and it was only after the uterus and its appendages had been removed from the body that the uterus was seen to be abnormal. The uterus and appendages were then handed over to me.

The following description of the parts will be better understood if reference be made to the excellent drawing of the specimen, which is here reproduced.

Description of uterus and appendages. The parts submitted consist of the uterus and appendages, together with the upper part of the vagina (1, 1^1). The uterus has been laid open by a longitudinal incision extending from the os internum to the right cornu (5). The uterus measures externally in the middle line about $3\frac{1}{2}$ins. It is bicornute and unsymmetrical. The right cornu (5) is well developed and the uterine cavity is continued into it to the ostium internum of the oviduct. The left cornu (5^1) is rudimentary in its development. It is smaller than the right, it is club-shaped, it is impervious in the greater part of its length, but a transverse incision made near the outer end (6, 6) shows a small limited cavity containing caseous material (6,^{1} 6^1). This cavity does not extend along the cornu, and there is no sign in the uterus of any communication with the cornu.

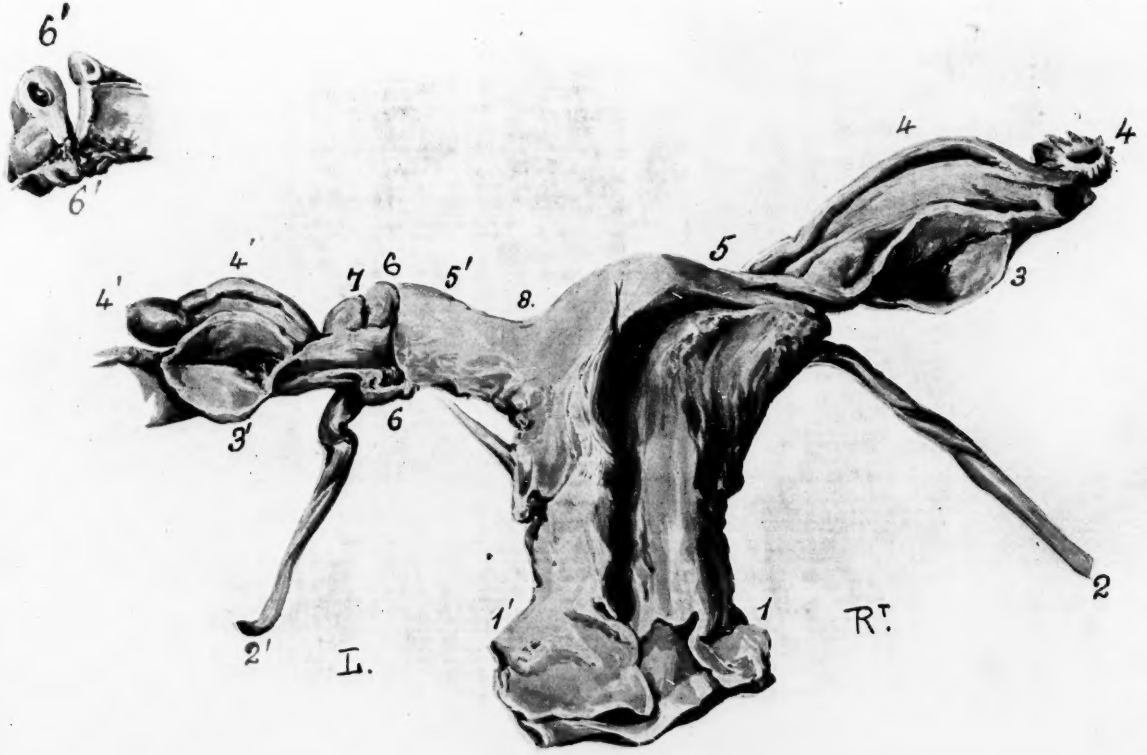

Fig. II.

If any central canal ever existed it has become obliterated. A wide notch (8) marks the divergence of the two cornua.*

At the outer end of the rudimentary horn is a well-marked cicatrix (7). To this we draw special attention as the probable seat of an old rupture. The two round ligaments are well marked on each side (2, 2^1) and show the termination of each cornu. The right oviduct (4, 4) is quite normal and terminates in a normal fimbriated end. The right ovary (3) has been cut open longitudinally. It shows almost no trace of Graäfian follicles and is in the atrophic condition common at her age (62). The meso-salpinx is thin and transparent, and normal. The left ovary (3^1) is smaller than the right and measures about 1in. by $\frac{1}{2}$in. The left oviduct ($4,^1 4^1$), shorter than the right, measures 3ins. long, and its fimbriæ are adherent, so that the end is clubbed, but there is very little thickening. The left meso-salpinx is thin and transparent. The broad ligaments on each side were normal.

Remarks. The most probable explanation of this case is that it was an example of pregnancy in a rudimentary cornu, that rupture took place gradually, the amniotic sac remaining entire, and the placenta gradually extending over the uterine fundus and the adjacent parts.

The thin membrane which Dr. Braithwaite describes was almost certainly amnion. The complete absorption of the placenta is a very important point. The fact that both oviducts were normal as well as the meso-salpinx on each side makes it very unlikely that *tubal* pregnancy had been present. The fact that a rudimentary cornu showing an old scar was found makes it probable that the pregnancy was *cornual*, becoming *abdominal*. We might describe the case as one of *cornu-abdominal* pregnancy. We do not know whether the term *cornu-abdominal* has been previously employed, but it seems legitimate in this case.

Description of Fig. II.

Uterus and appendages removed *post mortem*, posterior aspect. An incision has been made along posterior uterine wall and another across the left cornu (6, 6).

* Specimens very similar to this have been described as *unicornute* uteri. As regards the cavity of the fundus the term is applicable. But the uterus has two horns, and is therefore *bicornute;* one of the horns is rudimentary, but yet it was sufficiently developed to become the seat of a pregnancy. We cannot bring ourselves to describe the specimen as a *one-horned* uterus in which pregnancy occurred in the *other* horn!

1, 1.[1] Vagina at level of os externum uteri.
2, 2.[1] Round ligament.
3, 3.[1] Ovaries cut longitudinally.
4, 4. Right oviduct ending in normal fimbriated extremity.
4,[1] 4.[1] Left oviduct ending in clubbed extremity.
5. Right uterine horn.
6.[1] Left uterine horn.
6, 6. Section through left horn (closed).
6,[1] 6.[1] Same opened out showing small cavity.
7. Cicatrix, showing seat of old rupture.
8. Bifurcation of uterine cornua.

For the photograph we are indebted to Mr. Oliver, of the Leeds Infirmary, and for the drawing of case No. 2 to Miss Ethel Wright.

Amenorrhœa, Associated with Serious Eye Symptoms in a Young Girl.

By J. E. Gemmell, M.B., *Hon. Surgeon to the Hospital for Women; and to the Lying-in Hospital, Liverpool; Hon. Gynæcologist, Victoria Central Hospital, Liscard.*

On January 3rd, 1904, Mr. Bickerton, ophthalmic surgeon, asked me to see a young lady in consultation with him, who was suffering from hæmorrhages in both eyes, associated with amenorrhœa; and to advise as to the means of re-establishing menstruation.

The patient was a schoolgirl, æt. 16, who gave the following history:—Menstruation occurred normally from September 19th to 27th, 1903. On September 23rd she travelled from North Wales to Arnside for the purpose of entering a ladies' boarding school, this being her first term away from home. Menstruation has not taken place since, but about the end of October (*i.e.*, about the next menstrual period), whilst at her drawing-class, she found she was blind in the right eye, but could see quite well with the left eye. The condition was noted, but nothing was done until she came home for the Xmas holidays, when her parents took alarm at the blindness.

Mr. Bickerton saw her on December 31st, and reported:—Right vision nil. Doubtful if she can even detect light. Right fundal reflex nil, except at the upper and inner quadrant, where there is a small triangular space of fundal reflex. Left vision, $^{62}/_{24}$, $^{6}/_{18}$, perfectly, $^{6}/_{12}$ one. Jaegar 1 at 15 inches. In the left eye is seen a faint floating vitreous cloud.

Menstrual history. Commenced at 13; regular 28-day type; usually four days, up to September 19th, 1903, since which time amenorrhœa. The last menstrual period was prolonged to eight days, and occurred at the time she had to travel North. At the same time, it may be noted, she goes to a new school, is amongst strangers, and for the first time in her life alone and away from home.

General history. Her general health is good, there is no anæmia, chlorosis, or constipation. She is well nourished and of a rosy complexion; the appetite is good, and she has had plenty of good, wholesome food, made up of a mixed diet. The blood has been examined by Dr. Warrington and found normal in all respects. Urine normal. There is no vaginal discharge of any description, no complaint of pelvic disorder, no symptom of menstrual molimina. She has taken a good place in the school, but has had to work hard. Exercise has been a boarding-school walk and calisthenics.

With such a history it will be observed there is an absence of the more usual causes of amenorrhœa, excepting those of climatic change, increased mental activity (under competition), and insufficient out-door exercise. It is not uncommon to find amenorrhœa under similar circumstances; very frequently it occurs in young ladies going to school in Belguim, France and Germany; most probably due to the change of diet, and not giving rise to symptoms other than those of lassitude and headache, it is consequently not regarded as of much moment; but if such a serious complication as blindness may be a result, then the subject is one worthy of consideration and closer attention. Why should such conditions produce amenorrhœa? and why should amenorrhœa be associated with hæmorrhages into the vitreous?

In looking up the literature of such cases in gynæcological works, under the heading of "Amenorrhœa, Symptoms, Treatment, &c.," I find no allusion to eye symptoms, except by Pozzi, who states that "certain sensorial disorders, such as weakness of sight, &c., may appear," and refers to the works of Abadie and Mooren for further information.

We know very well that the generative system is so intimately related to the whole organism as to exert an influence such as is not seen in the case of any other system. We also know that irritation of any sensory nerve has a reflex action upon other nerves, either of a similar or different function, and through the vaso-motor system its influence may be exerted upon blood-vessels, the most distant from the point where the disordered action began. Thus the complex nervous connections of the uterus and ovaries, through the splanchnic system, render reflex disturbances in such distant parts as the eye, as a result of irritation, very possible.

Further, the whole system sympathises with the development of the menstrual discharge, and every ophthalmic work refers to *eye changes* associated with the *reproductive system* and with menstrual disorders.

Many illustrations are quoted of inflammatory conditions of cornea and sclerotic getting well in the inter-menstrual period and recurring with the onset of menstruation.

In the early stages of renal disease, hæmorrhages are apt to occur in the retina, resulting from the absorption of toxins, and independent of those due to vascular changes, which occur later; so it is possible that we may have an analagous condition here, for with amenorrhœa there is an interference with that elimination of toxic substances by the uterus, which is said to occur at each monthly

period. This may lead to an accumulation of toxins, which will affect the nutritive power of the blood, or act as an irritant to the uterine nerves. Vicarious menstruation is considered to be the cause of these hæmorrhages by the ophthalmic surgeons, and although as a student I was taught to believe that there was no such thing as vicarious menstruation, yet experience has demonstrated various hæmorrhages (epistaxis, hæmoptysis, hæmatemesis) recurring at a menstrual period, and dependent upon that period. Women themselves also believe thoroughly in the occurrence of vicarious menstruation, that belief being based upon the experience of their sex, so that now I am of the opinion that there does occur at times a vicarious menstruation, and that this case belongs to this category.

As to treatment, it is admitted that the first thing to do is to re-establish the menstrual flow, and therefore we prescribed a mixture of iron and aloes, to be taken three times a day, and thyroid tabloids, 5 grs., at bedtime, with the result that menstruation took place again on January 19th.

The local treatment adopted by Mr. Bickerton was rest in bed in a warm room, and leeches occasionally to the temples, and on January 18th his report was: "Left eye perfect; right eye very little improvement."

The prognosis as regards the eye is not very favourable, but if the menstrual period is not re-established it becomes still more grave, as there may be repeated hæmorrhages into the eye that may cause permanent damage.

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CRITICAL REVIEW

The Internal Secretion of the Ovary.

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In this review an attempt will be made to bring together the evidence which exists as to the manner in which the ovary affects the organism, and the reasons for believing that it provides an internal secretion. The transplantation experiments will be described which furnish evidence in support of this supposition. The results of treatment with ovarian extract will be reviewed, and an account will be given of the interesting work that has been done recently on the functions of the corpus luteum, and on pathological conditions of this structure which are seen in conjunction with pathological conditions of the ovum.

I. *The influence exerted by the ovary upon general metabolism.*

It has been known for many years that the ovary exerts in some way an influence on the organism, and that removal of the ovaries is followed by marked results. Several observers have tried to prove experimentally how the metabolism is affected by removal of the ovaries, but the exact nature of these changes is not known.

Fehling, who was instrumental in establishing the operation of removal of the ovaries as the treatment for osteomalacia, examined and found no changes in the urine of seven osteomalacic patients before and after the removal of the ovaries, from which definite conclusions could be drawn as to the nature of the change in metabolism effected by the operation.

In 1894 and 1896 Siegfried Neumann published the results of his experiments. He says that in osteomalacia not only the metabolism of the bones but that of the whole organism suffers pathological changes. In the later stages there is a destruction of proteid, not only in the bones, but in the whole organism. In the milder cases removal of the ovaries has a marked effect in diminishing the excretion of calcium, magnesium, and phosphorus, and also in diminishing the destruction of proteid.

Curàtulo and Tarulli in 1895 carried out a series of experiments on bitches. They were fed on a regular diet until the average daily excretion of nitrogen and phosphorus was uniform, and then the

ovaries were removed. The operation was followed by a great diminution in the excretion of phosphorus. They conclude that "the ovaries, like the other glands, according to Brown Séquard's theory, continually pour into the blood an internal secretion whose chemical composition is as yet unknown, which favours the oxidation of phosphorus-containing organic substances which build up the bones. It follows that by removal of the ovaries a retention of organic phosphorus is brought about, which results in a greater accumulation of calcium and magnesium phosphate and the restoration of the normal firmness of the bones."

Neumann and Vas investigated the influence of ovarian preparations on metabolism by three series of experiments:—

1. Effect of ovarian preparations on normal female animals. They found that Merck's tabloids given even in excessive doses made no marked difference in the amount of nitrogen, calcium, or phosphorus in the urine. A preparation made by themselves from cows' ovaries, however, caused an increase in the amount of nitrogen, calcium, and phosphorus excreted.

2. Effect of removal of ovaries. Neither immediately nor later was there any marked change in the amount of phosphorus excreted.

3. Effect of ovarian preparations on animals whose ovaries had been removed. There was an increase in the amount of phosphorus and calcium excreted, which continued after cessation of treatment. There was a less marked increase in the amount of nitrogen excreted during treatment.

Falk in 1899 repeated Curàtulo's and Tarulli's experiments, but did not arrive at the same results. In two bitches from which he removed the ovaries he found practically no difference in the amount of phosphorus excreted before and after the operation.

From the results of these various experiments we can only draw the conclusion that we do not yet know how metabolism is affected by removal of the ovaries. In the light of modern knowledge on excretion of phosphorus, the experiments of Caràtulo and Tarulli would be of little value, as it is known that a large proportion of the phosphorus excreted in the urine is derived from nucleo-proteid taken in as food. Thus it is possible that the increased amount of phosphorus excreted after ingestion of fresh ovaries or ovarian extract is derived from the nucleotin phosphoric-acid of the nucleo-proteid. Control experiments should be performed by feeding with other glandular organs.

II. *The means by which this influence is exerted:*—

(a) *Nerve influence.*

(b) *Internal secretion.*

One theory, which has received very little support, is that the ovary influences the organism through the nervous system.

Elisabeth Winterhalter described a sympathetic ganglion in the human ovary. She said that the ovary possessed (1) a peri-vascular plexus and (2) a ganglion in the zona vasculosa, consisting of cells of the character of sympathetic ganglion cells.

Von Herff says that the presence of ganglion cells in the ovary cannot be considered proved, although their occurrence in the sympathetic plexus in the hilum is probable. "There can, however, be no talk of a 'ganglion' in the ordinary sense of the term; no such thing is found."

The "nervous influence" theory is disproved by the transplantation experiments.

(b) *Transplantation of ovaries.*

Knauer removed both ovaries in rabbits, and implanted them either in the mesometrium or between the fascia and muscle of the belly wall. He sums up his results as follows:—

In the rabbit the ovaries can be grafted on to peritoneum or muscle. Ovaries so grafted are not only nourished but are functionally active, *i.e.*, ova develop, ripen, and, in some circumstances, can even be expelled from the follicles. Such ova are capable of being impregnated, and normal pregnancy with birth of well-developed young may result. A certain amount of the transplanted ovary always dies. If the whole ovary dies the whole genital system atrophies. The influence which the ovaries exert upon the organism, and especially upon the uterus, is intimately connected with the main function of the ovaries, the formation of ova. Ovarian tissue which has ceased to develope ova has also ceased to carry out its other functions.

The atrophy of the uterus following removal of the ovaries is due, not to cutting off blood supply, but to cutting off ovarian influence, and this influence is proved by Knauer's experiments not to be a nervous one. As long as a functionally active ovary is present in the organism it does not matter in what part of the body it is.

Grigorieff transplanted rabbits' ovaries on to the broad ligament, peritoneum of the vesico-uterine pouch, etc. He found that the transplanted ovaries differed in no way from ovaries in their normal

situation, that follicles ripened and burst, that ova could become impregnated and normal pregnancy result.

Glass transplanted a healthy ovary from a girl of 17 (removed on account of stricture of the vagina) to a patient of 29 whose ovaries had been removed two years before. The ovary was sutured in the normal situation. The patient had been much troubled by menopause symptoms. Six days after the transplantation of the ovary she had erotic dreams, 16 days later she had uterine hæmorrhage for two days, and six months later another uterine bleeding lasting three days. Eight months after the operation she was perfectly well.

Dudley, after removing a double pyosalpinx from a patient of 21, implanted the right ovary on the fundus uteri. The patient menstruated regularly afterwards.

Halban removed the ovaries of a new-born guinea-pig and transplanted them under the skin. The uterus and mammary glands developed as well as in normal animals. Corpora lutea were found in the ovaries when they were examined later. The uterus and mammary glands of control animals whose ovaries were removed but not transplanted remained in an undeveloped condition.

The results of these various transplantation experiments are best summed up in Knauer's words:—"As long as a functionally active ovary is present in the organism it does not matter in what part of the body it is situated." The deduction from this fact must be that the ovary exerts its influence over the organism by means of its connection with the blood, not through the nervous system, and this is practically the same thing as saying that the ovary exerts its influence by means of an internal secretion.

III. *Results of ovarian medication.*

Since 1889 the influence that the ovary exerts on the organism has been generally supposed to be due to the presence of an internal secretion. The ancients administered the testicles of the fox, the liver of the wolf, the lungs of the deer, etc., but apparently never used the ovary medicinally.

In 1889 Brown Séquard made his first communication on testicular extract. He admitted that a preparation from the ovary had analogous properties, but considered that the ovarian extract was much less active than the testicular, and was without special action.

In the same year Madame Brown injected 46 old women with ovarian extract, but without much success.

Villeneuve in 1892 prepared a watery solution from the ovaries

of guinea-pigs and injected it into five debilitated patients, three women and two men. It produced no effect on the men nor on one of the women, who was 90 years old. In the other two female patients, however, it was successful in increasing their strength.

In 1896 a large number of papers on the subject of treatment with ovarian extract appeared.

Mainzer treated a patient who complained of heats, sweating, flushing, headache, sleeplessness, etc., after removal of both ovaries. She had previously had eighteen months' treatment with every other possible remedy with no benefit. There was rapid and very marked improvement when she was given a preparation of cows' and calves' ovaries.

Mond used two preparations, one from the whole ovary, the other from the contents of the follicles alone, in the troubles of the menopause both natural and post-operative, and in amenorrhœa due to uterine and ovarian atrophy. The results he obtained were good enough to warrant further trial of the treatment.

Mainzer in the same year published the results of further treatment with a preparation made from dried fresh ovaries. He found that the vaso-motor troubles of the natural and artificial menopause were completely removed, and saw good results in cases of primary and secondary amenorrhœa. In these cases the catamenia often made their first appearance or re-appearance during treatment. Nervous and hysterical patients in general were not at all improved. No bad results need be expected if the preparation is carefully made. The improvement did not last long after the treatment was entirely given up. Small doses should be given again from time to time.

Leopold Landau wrote that "ovarian extract is a remedy that enables us to diminish the severe troubles of the natural or artificial menopause, and usually to cure them, without any unpleasant results."

Bodon used 'ovariin' in cases of natural menopause with gradual improvement, and in a case of artificial menopause with very marked results. He also administered it to an epileptic girl with the result that the fits became much less frequent.

Jayle recorded six cases in which ovarian extract had produced good results in the treatment of the troubles of the post-operative menopause. He had also tried the treatment in three cases in which operation was indicated on account of endometritis and old salpingitis. In two of these cases there was no improvement, but the third patient felt so well at the end of a month's treatment that she would not hear of any surgical intervention.

Lissac published six successful cases. His conclusions were that

" ovarian opotherapy seems to ameliorate permanently or temporarily the majority of the troubles following oöphorectomy, particularly the flushings, insomnia, nightmares, and headaches."

Muret employed ovarian opotherapy in 20 cases for troubles of the menopause, chlorosis, and amenorrhœa due to imperfect development of the genital organs. He found that the ovarian extract was always well borne and never gave rise to any unpleasant symptoms. In the natural and artificial menopause he found the results good. There was marked improvement in the cases of chlorosis and amenorrhœa, but the number of cases was too small for him to make any more definite statement.

Spielmann and Etienne treated six cases of chlorosis and amenorrhœa with fresh ovaries, powder of dessicated ovaries or ovarian extract. In four of the patients there was rapid improvement with re-appearance of the catamenia and a marked increase in the number of red blood corpuscles.

Fideli also obtained satisfactory results in treating cases of chlorosis with ovarian extract.

Chrobak treated three cases of post-operative menopause with ovarian extract. In the first case faintness, flushings, sweatings, etc., became less frequent under treatment, but returned when the treatment was discontinued. In the second case the attacks completely disappeared after 12 doses. The third case and one of natural menopause also improved under treatment.

In 1897 Jacobs and Touvenaint published results. Jacobs had treated 79 cases of troubles of the menopause, natural and post-operative, amenorrhœa, dysmenorrhœa, and anæmia with 75 successes. He also tried the treatment in two cases of neurasthenia with no benefit.

Touvenaint had excellent results in treating amenorrhœa and chlorosis, and good results in cases of artificial menopause. In cases of natural menopause his results were good enough to warrant further trial.

In 1898 Bestion de Camboulas published his monograph " Le Suc Ovarien," which contains the best account of the subject that has yet appeared. He performed numerous injection experiments with ovarian extract on guinea-pigs, rabbits, and dogs, on males and on pregnant and non-pregnant females. He found that toxic effects were far more marked in males than in females. After large doses the males died with pyrexia, hæmaturia, sloughing of the injection wounds, convulsions, genital excitement, and in some cases paralytic phenomena. With non-toxic doses the males lost weight,

while the females gained weight. The resistance of pregnant females was much less than that of non-pregnant, and they all died with what corresponded to lethal doses for males.

The lesions found after fatal doses were congestion of viscera, most marked in the liver and kidneys, and minute hæmorrhages in the dorsal and lumbar regions of the spinal cord.

He records numerous clinical observations from his own practice and that of others. The element of suggestion was excluded; none of the patients knew what they were taking. No change in respiration or circulation was noticed.

He sums up his results as follows:—Troubles of the menopause, natural and artificial, disappeared or were much ameliorated by ovarian extract without other medication. Rapid improvement was always seen in amenorrhœa and chlorosis. The influence of the extract on the mental troubles which accompany genital lesions or follow oöphorectomy is a real one. Improvement in the general condition is marked in all cases. It must never be given to pregnant women, as it produces such grave effects on pregnant animals.

Fosbery, in 1897, reported successful treatment of climacteric flushings by ovarian extract in one case. The flushings were almost cured by the time three dozen palatinoids had been taken. After this the patient found that one palatinoid taken occasionally kept her free from flushings.

Dalché, in 1898, had seen good results in the treatment of menopause, artificial and natural, and in chlorosis. He considers that there is an antagonism between the thyroid and the ovary. In Graves' disease there is often amenorrhœa, in myxœdema often metrorrhagia, and conversely uterine bleeding is often treated successfully by thyroid extract. He considers the treatment also useful in amenorrhœa, dysmenorrhœa, melancholia, neurasthenia, hysteria, etc. He has seen no bad results, such as headache, nausea, or vomiting.

Cohn, on the other hand, writing in 1899, finds the results of all varieties of ovarian preparations disappointing, with only occasionally slight good results, although he used the same preparations as Leopold Landau, in whose hands their results were excellent.

Seeligmann, in 1900, says that his experience teaches him "that there is an internal secretion from the ovary which is necessary for the organism, and that this substance given in oöphorin tablets is most useful in the troubles of the menopause."

Baruch, writing in the same year, reports a good result in two

cases, fairly good in two others, entirely bad results in one, and in seven no result at all.

Flockemann, in 1901, reported six complete successes, four marked successes, nine partial successes, and nine failures, after double removal of the ovaries. He saw no bad results.

In analysing the observations of these various writers we find that good results were obtained in the treatment of:—

Troubles of menopause, natural or post-operative, by Mainzer, Landau, Bodon, Jayle, Lissac, Muret, Spielmann and Etienne, Chrobak, Jacobs, Touvenaint, Bestion de Camboulas, and Seeligmann.

Chlorosis and amenorrhœa, by Mainzer, Muret, Spielmann and Etienne, Fideli, Jacobs, Touvenaint and Bestion de Camboulas. Baruch, Mond, and Flockemann report a moderate degree of success.

Cohn is the only writer that I have been able to find who says that the results are nearly always disappointing. Most writers emphasise the fact that the treatment itself has no bad results. When bad results have been seen they have probably been due to faulty preparations. Many British gynæcologists have given a more or less extended trial to ovarian preparations, but have not published any results, a fact which makes it highly probable that the treatment did not meet with so much success in their hands as in those of the authors quoted above. An interesting point to be remembered is that some preparations have been made from the ovaries of heifers, sexually immature animals. It is possible that want of success has been in some cases due to the use of these inactive preparations.

The great difficulty in judging the therapeutic effects of ovarian extract in climacteric troubles is that these are mainly subjective. The objective signs—faintings, flushings, sweats, etc., are only occasional and transitory, and are too slight and too temporary to make it possible to take the patients into hospital and watch them. Hence the evidence as to the benefits conferred is derived from statements made by the patients, not from the personal observations of the physicians. The statements of patients are influenced sometimes by a desire to please their doctor. Benefit to subjective symptoms, or a belief that benefit has been conferred, is often produced by suggestion. The symptoms of the climacteric tend to diminish and disappear after a certain length of time without any treatment. This tendency to spontaneous amelioration is always present, and must be allowed for before concluding that improvement is due to treatment.

With regard to the cure of chlorosis, anæmia, and amenorrhœa by ovarian extract it must be remembered that these conditions can

be cured by other means. The practical question is, does ovarian extract cure them more quickly than anything else?

Methods of administration. (The following paragraphs are taken chiefly from Bestion de Camboulas' monograph):—

1. *Fresh gland.* Jayle, Lissac, Mainzer, Spielmann and Etienne used fresh ovaries minced, in sandwiches. Against this method of administration are the facts that it is repugnant to the patients, and that fresh ovaries will not keep more than three days, even on ice.

2. *Dry gland.* Ovarian powder has been much used, usually in pastilles, under the name of ovarine, ovaraden, oöphorin, ovigenine, or ovairine. Ovarine has sometimes a rather strong odour. Some have found that it decomposed and then produced headache, vertigo, vomiting, and palpitation. These symptoms were probably due to the presence of ptomaines. Bestion de Camboulas has had none of these bad results. He uses equal parts of sugar and fresh ovary, with enough gum to enable the mixture to be made into pills.

3. *Ovarian juice* or fluid extract, either watery, glycerinated, or alcoholic has been used by Bestion de Camboulas. The last cannot be used for injections. The two former can be administered by mouth, by rectum, or hypodermically. The ovaries of the sow are the best to use. They are easily obtained, of a good size, 3—4½ grammes, and the animals are not killed until they have farrowed, therefore the ovaries are sexually active. The ovaries of heifers are not active. Cows are too liable to tubercle. Ewes' ovaries are too small. Glycerine extract contains 10 per cent. of ovary. Aqueous extract contains 16 per cent., but does not keep so well, and is less active. Bestion de Camboulas considers that glycerinated extract and dry extract are the best preparations. They are equally efficacious, except that constipation yields more rapidly to the glycerinated extract.

IV. *The functions of the corpus luteum.*

Gustav Born, of Breslau, first suggested that the corpus luteum of pregnancy was a gland with an internal secretion, the function of which was to further the embedding and development of the impregnated ovum in the uterus. Too ill himself to work out this hypothesis experimentally he asked Ludwig Fraenkel to undertake the work. Fraenkel believes from his experimental researches that the corpus luteum has a wider function. During reproductive life it maintains the raised standard of uterine nutrition; the increase in size and blood supply of the uterus during these years, and the monthly hyperæmia, are the results of the internal secretion of the

corpus luteum. If an ovum is impregnated this secretion furthers its insertion and development, and if no ovum is impregnated it brings about menstruation. When corpora lutea are absent the uterus atrophies and menstruation ceases. The condition of the uterus before puberty and after the climacteric is due to the absence of corpora lutea.

The evidence that Fraenkel brings forward in support of his views, apart from experimental evidence, may be briefly summarised as follows:—

The microscopical structure of the corpus luteum suggests that of a gland. Large epithelioid cells, the so-called lutein cells, are arranged in regular rows and columns with capillaries between the rows, in a manner much resembling a liver acinus or the cortical layer of the suprarenal body. The lutein cells are the parenchymatous or glandular cells, and the capillaries serve not only for the nutrition of the gland but also, in default of other efferent ducts, for the carrying away of its secretion. Every single cell is surrounded by blood. The structure and size of the ripe Graafian follicle suggest that it has a further function than that of simply providing a shield for the ripening ovum. The size of the corpus luteum is greater than that of the unruptured follicle. This increase in size would be unnecessary if the corpus luteum were simply a transition stage between follicle and scar. It has been asserted that the increase in size of the corpus luteum is only a part of the general hyperæmia and hyperplasia of the genital organs that occurs during pregnancy. But the increase in size of the corpus luteum is out of proportion to that of the rest of the ovary; when the corpus luteum is most hyperæmic the rest of the ovary is markedly anæmic, and at the end of pregnancy when the increase in blood supply and hypertrophy of the genital organs are at their highest the corpus luteum is only a scar. All animals in which a uterine insertion of the ovum occurs possess well-developed corpora lutea, the oviparæ have only rudimentary corpora lutea or none at all. Sobotta and others have proved that the lutein cells are derived from the cells of the membrana granulosa and not from connective-tissue cells as some had supposed. There have been many recorded cases of double ovariotomy during pregnancy without disturbance of the pregnancy. None of these, however, have been during the early weeks.

Fraenkel would probably have modified some of his statements as to the influence of the corpus luteum on the decidua in the early weeks of pregnancy if he had been conversant with Peters' work on the embedding of the ovum. The former says:—"The corpus luteum

possesses the function of so preparing the uterus that the ovum can embed itself and develop in it. The ovum, before its insertion, is in a certain sense a foreign body not connected with the maternal organism by vessels or nerves, and so could not cause the changes which are seen in the endometrium before the ovum is embedded, viz., decidual changes." The more recent theory, as will be seen later, is that the corpus luteum is responsible for the activity of the trophoblast, and this theory can be grafted on to that of Fraenkel without any difficulty.

The following points were investigated by experiment:—

1. The influence of the ovary on the implantation of the impregnated ovum.

2. The influence of the ovary on the further development of the implanted ovum.

3. Whether this influence is exercised by the whole ovary, or by the corpus luteum alone.

Rabbits were chosen for these experiments. Their follicles burst just after parturition. They permit coitus at the same time. This coitus is fruitful, spermatozoa reach the ovary three hours later, seventy hours later the ova reach the uterus, and from four to seven days later the developing ova are embedded in the endometrium.

Fraenkel allowed numerous rabbits to copulate just after parturition. He removed the ovaries from thirteen of them, one to six days later, and killed the animals some time after and found the uterus empty in every case. The removal of the ovaries had prevented the implantation of the ova. Removal of one ovary in other rabbits had no effect on pregnancy. This was an important control experiment showing that shock, anæsthetic, etc., were not the cause of the non-implantation of the ova. When the ovaries were removed after implantation of the ova, the ova ceased to develop, but were not expelled from the uterus.

In order to show that the corpus luteum and not the whole ovary is concerned in permitting pregnancy to occur he destroyed with the galvano-cautery all the corpora lutea present in the ovaries, and did not remove the ovaries. The results were the same as when the whole ovaries were removed. There were sometimes twice as many ova as corpora lutea. He found that at least one corpus luteum must be left in order that pregnancy might continue.

Transplantation of corpora lutea delayed, but did not prevent, destruction of the ovum. He inferred from this that some secretion was carried from the transplanted corpora lutea by the blood-vessels,

and that any influence exerted by the corpus luteum could not be nervous.

Fraenkel next considers the influence of the corpus luteum on menstruation. The corpus luteum of menstruation in all animals resembles in every way that of pregnancy. Zschokke says that in the cow all corpora lutea are of the same size. Sobotta found that in the mouse the corpora lutea of follicles whose ova are unimpregnated are equal in point of size and development to those of follicles whose ova have been impregnated. Kreis compares the arrangement of the capillaries in the so-called "false" corpus luteum to that found in the liver. According to him, at the beginning of the second week the "false corpus luteum has the same appearance as that seen in the "true" in the third month.

Does the "false" corpus luteum cause the four-weekly hyperæmia? Removal of the corpus luteum causes atrophy of the uterus. Fourteen days after burning out the corpora lutea in rabbits Fraenkel found the ovaries healthy, but the uterus very much atrophied. Fraenkel has in nine cases burnt out a corpus luteum while performing laparotomy in women. In all but one of these the next period was missed, the patients having no loss of blood until three to eight weeks after the expected time.

Fraenkel sums up his deductions from his experiments thus:— "The corpus luteum is a gland which is renewed every four weeks in women during reproductive life, and at varying intervals in animals. It controls the nutrition of the uterus in a cyclic fashion, prevents it from relapsing into its infantile or passing into its senile condition, and prepares the endometrium for the reception of the ovum. If the ovum be fertilised the corpus luteum continues to exist and to maintain the raised nutrition of the uterus during pregnancy. If the ovum be not fertilised the corpus luteum merely produces the hyperæmia of menstruation and then degenerates. There is, strictly speaking, only one corpus luteum, one real ovarian gland which regenerates itself periodically in slightly different situations and controls uterine life from puberty to the menopause. Menstruation is caused by the secretory activity of the corpus luteum, not by the pressure of the growing follicle on the ovarian nerves. This secretory activity causes the four weekly hyperæmia which leads to pregnancy or menstruation. Anomalous uterine bleeding and some cases of sterility may depend on pathological conditions of the corpus luteum. Amenorrhœa and uterine atrophy may also result from the same cause. Lactation-atrophy is a good example; during

lactation there is, as a rule, no ovulation, therefore no fresh corpora lutea are formed."

"If the corpus luteum is the ovarian gland there is no object in using the whole ovary for purposes of organo-therapeutics. Cows' corpora lutea can be obtained easily, a corpus luteum as big as a walnut being found in every fourth ovary. Fraenkel used a preparation of "lutein" made from cows' corpora lutea in sixteen cases of troubles of the menopause, and was satisfied with the results. As regards ovariotomy during pregnancy he advises that the operation be put off if possible until after the fourth month, and that resection leaving the corpus luteum be performed. When the ovaries are removed during pregnancy "lutein" should be administered."

Fraenkel's view that the corpus luteum is responsible for the early development of the ovum receives support from the number of cases recorded in which pathological conditions of the ovum have been found with pathological conditions of the corpus luteum.

Many cases have been recorded of double ovarian tumour with hydatidiform mole. In 1880 Max Runge described a case in which, together with a vesicular mole were found bilateral ovarian tumours the size of hen's eggs containing numerous cysts filled with clear fluid. Marchand, in 1895, notes the frequency of cystic change in the ovaries in cases of hydatidiform mole, but does not describe a case. Matwejew and Sykow recorded a case in which a cystic right ovary was found, containing a corpus luteum, with a vesicular mole in the right tube. Albert saw a case in which, at the time of expulsion of a hydatidiform mole, bilateral ovarian tumours, each as large as a fist, were found. Two months later the ovaries were found to be once more of normal size. Runge, in 1903, found that in 28 recorded cases of vesicular mole the presence of bilateral ovarian tumours was noted 12 times. In the other 16 cases no note was made as to the condition of the ovaries. Pfannenstiel, Kaltenbach, Baumgart, Mrs. Scharlieb, Malcolm, Bell, Cuthbert Lockyer, and Deseniss have also recorded cases of bilateral ovarian tumours with hydatidiform mole. In spite of these cases Findley says that there is no proof that cystic degeneration of the ovaries has any influence upon the cystic degeneration of the ovum.

In 1895 Marchand recorded the presence of a cystic ovary in a case of chorio-epithelioma. Ludwig Fraenkel found bilateral ovarian tumours in a case of "carcinoma of the uterus growing from the epithelium of chorionic villi."

In many cases microscopical examination of the ovaries has

proved that they contain *corpus luteum cysts.* In 1896 Neumann found both ovaries in a case of "deciduoma malignum" full of small cysts and permeated by lutein cells. Poten and Vassmer found bilateral corpus luteum cysts with a vesicular mole. In 1903 three important papers appeared by Pick, Runge and Jaffé, showing that in cases of vesicular mole and chorio-epithelioma there is an excessive production of lutein cells in the ovaries.

Pick gave a very full description of the microscopical appearances of an ovary from a case of hydatidiform mole. The "corpus luteum verum" itself was not cystic. Not only were the "corpora lutea spuria" cystic, but even unruptured follicles had undergone abnormally rapid development and formed corpus luteum cysts. Pick gave the name "degeneratio polycystica luteinalis" to this variety of ovarian tumours. Stoeckel had found widespread dissemination of the lutein cells throughout the ovarian parenchyma. Pick considers that the most important point is not the formation of corpus luteum cysts but the overproduction of lutein tissue. He regards this overproduction of lutein tissue as the cause of excessive chorio-epithelial action in the uterus or the tube, and the conversion of the ovum thereby into a hydatidiform mole. Whether this overproduction always occurs in cases of vesicular mole and chorio-epithelioma or not Pick says it has always been found when looked for.

Runge found that in 144 reported cases of syncytial tumours there was no note as to the condition of the ovaries in 81. Out of the remaining 63 the ovaries were more or less markedly cystic in 24. He examined the ovaries in seven cases of chorio-epithelioma and one case of vesicular mole. The ovaries were full of corpus luteum cysts and also contained in the ovarian stroma collections of cells exactly like the lutein cells, with no apparent connection with any corpus luteum cyst. He considers it probable that this change is never found except in cases of vesicular mole or chorio-epithelioma.

Jaffé examined the ovaries from a case of hydatidiform mole, followed by chorio-epithelioma. He found corpus luteum cysts in both ovaries and lutein cells disseminated throughout the stroma. He says this change is sometimes seen in ordinary pregnancy, but appears to be constant in cases of hydatidiform mole. He considers that the corpus luteum presides over the activity of the trophoblast.

Corpus luteum cysts and tubal pregnancy. Fraenkel has seen three cases of tubal pregnancy in which the corpus luteum was cystic. Matwejew and Sykow, as mentioned above, record a case in which the right tube contained a vesicular mole and the right ovary a corpus

luteum cyst. Opitz found the corpora lutea to be cystic in seven out of 18 cases of tubal pregnancy. In another case no corpus luteum could be found, and each ovary was converted into a unilocular cyst of the size of a goose's egg.

We do not know at present, and it is unlikely that we shall ever know in what proportion of cases of normal pregnancy corpus luteum cysts and "degeneratio polycystica lutinealis" occur. Jaffé says that the latter condition is sometimes seen in normal pregnancy. I have found no recorded cases. An observation on the condition of the ovaries in a case of one normal placenta and one hydatidiform mole in a twin pregnancy would be of great interest.*

Ludwig Fraenkel found, experimentally, that damage to corpora lutea short of destruction produced death or no effect on the impregnated ova, never pathological insertion or development.

Although there seems to be no doubt that the vital relations between the ovary and the uterus are to be looked on chiefly as the effect produced by the former on the latter, there is some evidence that there may possibly be action in the other direction, viz., influence exerted by the uterus on the ovary. It has been suggested, although I do not know that the idea has appeared in print, that there may be an internal secretion of the uterus, possibly from the whole organ, possibly only from the cervix.

It was hoped that menopause troubles could be avoided by leaving behind one or both ovaries after hysterectomy. Abel, however, noticed a gradual shrinking of the ovaries after hysterectomy, so that in many cases after three years he could hardly recognise the ovaries by bimanual examination. Menopause troubles appeared in these cases.

Burkhardt found troubles of the menopause in 33 per cent. of cases in which one ovary had been left after supravaginal amputation, in 50 per cent. after leaving one ovary after total hysterectomy, and in 50 per cent. after leaving both ovaries after total hysterectomy.

Werth found troubles of the menopause in 24 out of 35 cases in

* Since this paper was written such a case has been recorded by Birnbaum (*Monats. für Geburts. und Gynäkol.*, Bd. xix., Ht. 2), in which a patient was delivered of a fœtus 30cm. in length with a normal placenta and also a vesicular mole. She died 6 weeks later from morbus cordis. The right ovary showed nothing of interest. In the left ovary were two corpora lutea. One of these was normal; the other was markedly abnormal. The tunica propria and lutein sheet could not be properly differentiated, and there was irregular extension of lutein cells into the ovarian stroma.

which one or both ovaries had been left behind after supravaginal amputation. In some of these cases they appeared so soon that they could hardly be explained as due to secondary atrophy of the ovaries, and Werth considered that they were due to the operation itself.

Leopold and Ehrenfreund saw menopause troubles come on soon after the operation in 22 out of 43 cases in which one or both ovaries were left behind in vaginal hysterectomy for fibroids. More than half of these 22 patients had not reached the age at which the menopause is expected.

In view of the marked difference in structure of the corporeal and cervical endometrium it would be interesting to have further evidence as to whether troubles of the menopause appear more commonly after total hysterectomy than after supravaginal amputation, the ovaries being left behind in both cases. For such evidence to be of any value it would be necessary to have records only of cases operated on several years before the natural menopause would be expected.

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REVIEW OF CURRENT LITERATURE.

OBSTETRICS.

Researches on the Condition of the Blood and of the Secretion of Urine in Eclampsia.

ZANGEMEISTER (W.). *Zeits. für Geburts. und Gynäkol.* Bd. 1., Ht. 3. S. 385.

THE toxæmic theory of the causation of eclampsia is that which chiefly finds acceptance and is based mainly on the frequent co-existence of albuminuria, and on the renal changes almost always found *post-mortem*. Exact observations, however, show that there are exceptional cases in which, especially at the beginning of an attack of eclampsia, albuminuria is absent or very slight, and in which no renal change is disclosed by an autopsy; and it is a remarkable fact that pregnancy and labour in women with chronic nephritis does not appear to predispose to eclampsia. It is, therefore, still an open question whether the kidney phenomena are the cause, or part of the cause, of the affection, or whether they are merely concomitant.

Attempts to prove the toxicity of urine and serum by inoculation into animals have not proved satisfactory because of the complex conditions of the experiments. Zangemeister has therefore employed chemical methods in a series of investigations carried on at the Leipzig Clinic during the last $2\frac{1}{2}$ years, with a view to determine the relation between eclampsia and the renal functions.

The blood and urine in pregnant and parturient women show notable differences from those in the normal non-pregnant condition. At the outset it was necessary, therefore, to establish a normal for comparison with the results obtained in eclampsia. As regards the blood, Zangemeister found that in eclampsia the alkalinity is, as a rule, diminished, but concludes that this sign is merely to be considered as a concomitant and not as part of the cause of eclampsia.

The number of red-blood corpuscles in the blood of eclamptics is increased, sometimes to a very remarkable extent, so that the blood is markedly inspissated. This increase in number, the great differences in individual cases, and the rapid variations during the course of a case, are among the most remarkable peculiarities of the

blood in eclampsia. The white blood corpuscles are also, on an average, increased, but may remain normal in amount even after several convulsions. The freezing point of eclamptic blood is somewhat lower, that is to say, the molecular concentration is higher than in pregnancy and labour. The mean difference between the two conditions is very small, and in some cases the concentration was found to be lower in eclampsia. The specific weight of the serum varies directly with the amount of albumen present, since the molecular concentration is relatively constant. The specific weight and the percentage of albumen are both found on an average to be about the same as in pregnancy. The total nitrogen includes nitrogen present in albumen, and that present in the crystalloid nitrogenous bodies, urea, uric acid, creatin, ammonia, &c., the "N-rest." This "N-rest" is in eclampsia, as a rule, somewhat higher, and the small increase thus shown in the amount of extractives present in the blood serum must be looked upon as a consequence of the greatly diminished diuresis, and not as the cause of eclampsia. The amount of chlorides in blood serum lies between the averages found in pregnancy and labour. Oxyhæmoglobin is relatively often present in the serum and in the urine of eclamptics, and has never been found by the author in normal pregnant or parturient women; the explanation of this phenomenon is not clear, and calls for further investigation. Zangemeister concludes from his observations on the blood of eclamptics that they afford no proof of a uræmic causation of the affection. The changes found are due partly to diminution in the excretion of urine, and partly to severe disturbance of the circulation in the course of the disease.

The urine shows much greater and much more rapid variations in its constitution than the blood, and it therefore appeared necessary to examine it at short intervals. The urine was drawn off by catheter every three hours; every portion of urine was separately examined, and for purposes of comparison the results obtained from each sample were calculated for 24 hours.

Before considering the results in eclampsia the urines of the last month of pregnancy and of labour were examined. Zangemeister found that in the last three months of pregnancy in women lying in bed the daily output of urine is increased; the daily excretion of ammonia salts is somewhat increased; the daily quantity of chlorides is normal or perhaps slightly diminished. The daily output of phosphoric acid is decidedly lower, and the relative proportion in the urine therefore markedly less. Great variations in the rate of excretion both of water and salts occur, especially in primiparæ.

During labour there is diminished diuresis; the proportion of ammonia salts, phosphates, and especially of chlorides is, on an average, lower than in pregnancy, and the specific gravity is less. This diminished excretion of water and of salts depends upon lessened circulation in the kidneys during parturition. In the puerperium there is at first a notable increase in diuresis, both of water and salts, followed later by a gradual fall to normal.

In eclampsia the quantity of urine is diminished even to suppression during the attacks, and the excretion of urinary salts is correspondingly lessened. The diminution of diuresis begins during the course of the affection, and therefore cannot be the cause. Not uncommonly a sudden diminution coincides with a fresh outbreak or with a rapid succession of convulsions, so that it appears that the two phenomena depend upon a common cause. With a lessened amount of urine sometimes a marked rise in concentration is observed; occasionally, however, in the course of the affection there is a lowered concentration along with a diminution in quantity of the urine, and this is of grave prognostic significance. Almost at the same time that the attacks cease increased diuresis, frequently of concentrated urine, is observed, so that a great absolute quantity of salts is discharged. All these relations indicate that the disturbance of renal secretion and the convulsions depend upon one and the same cause.

The chlorides of the urine behave differently to the other salts in that the relative proportion present remains nearly constant. Koranyi has shown that the excretion of chlorides depends directly upon the circulation in the kidneys; when this is interfered with the chlorides are diminished. On this point Zangemeister has undertaken an elaborate series of comparative observations in healthy pregnant and parturient women and in eclamptics, and finds that, as determined by cryoscopy, the molecular concentration of the urine at the end of pregnancy is scarcely half so great as that of normal urine, and as the quantity of urine is only slightly increased the total amount of urinary salts excreted in 24 hours is less than in normal urine. This diminution concerns chiefly the chlorine-free salts, the excretion of chlorides being only slightly lessened. The chlorides, therefore, in pregnant women bear a greater proportion to the other salts. The diurnal variations in the excretion of chlorides are very great, while the excretion of the chlorine-free salts remains nearly constant. The absolute quantity of chlorides sinks during the day, and gradually rises during the night, the greatest excretion taking place between the hours of 8 and 11 a.m. It thus appears that the renal

circulation becomes gradually worse during the day, and improves again in the night. During labour the molecular concentration of the urine is decidedly higher than in pregnancy, but the quantity of urine is so much diminished that there is an absolute diminution of excretion of salts, the diminution being limited to the chlorides. Since the general blood pressure is increased during labour the pressure in the kidneys must also be increased, and an interference with the renal circulation can only depend upon the narrowing of the arteries, which apparently occurs under the influence of uterine contractions.

In nine cases of eclampsia Zangemeister found that the molecular concentration of the urine at the beginning of the affection was higher than in labour, and decidedly higher than in pregnancy. During the attacks the concentration fell, but not very markedly, so that it was still nearly the same as in normal labour. The diminution in concentration during the attacks depended as a rule only on the chlorides, the relative proportion of chlorine-free constituents remaining unchanged, and in individual cases fairly constant. The diminution in the excretion of chlorides is, with the lessened quantity of urine, the most marked and constant change which the urine undergoes in the course of eclampsia. This diminution as a rule only begins at the time of onset of convulsions, and in exceptional cases not until some time later; generally with the cessation of the attacks increased excretion of chlorides takes place, but occasionally this increase does not begin until after the attacks have ceased and consciousness has returned. It therefore appears that the eclampsia does not depend upon the changes in the renal secretion. The diminution in chlorides does not depend upon the constitution of the blood, since the quantity present in the blood of eclamptics is not changed, and the molecular concentration is scarcely or not at all increased. The sudden variations in chloride excretion can only be caused by sudden alterations in the renal circulation, depending upon active contraction of the vessels, such as always occurs in lesser degree in labour.

The author quotes Naunyn and Schreiber's experiments on brain pressure in support of the view that the cerebral phenomena of eclampsia can be explained by increased intra-cranial pressure, and especially by rapid variations in the pressure, and that these in turn depend upon high general blood pressure with acute intermittent cerebral anæmia brought about by arterial contractions. In fact, all the phenomena of eclampsia may be due to arterial spasms giving rise to periodic anæmias of the kidney, liver, pancreas, and brain.

Since eclampsia only occurs in pregnancy, labour, and the puerperium, in circumstances that is when rhythmical uterine contractions are or may be present, it is probable that arterial spasms are brought on with the uterine pains or by them. Whether the irritation of the vasomotor centres depends upon a toxin or on a reflex nervous stimulus is uncertain. The poison of eclampsia certainly does not arise from imperfect action of the kidneys, nor is it eliminated by them; the organic changes can be explained without the necessity of supposing that they are due to a toxin. Against the toxæmic theory it may further be noted that the affection is generally more severe the earlier in pregnancy or the later in the puerperium it makes its appearance, and that convulsions often come on with the first labour pain. Zangemeister admits, in conclusion, that his arguments are far from proving that eclampsia cannot be due to toxæmia, but urges that later researches should reckon more with the possibility that the affection may, after all, be a purely reflex nervous one.

THOMAS WILSON.

The Significance of Urinary Analysis in Pregnancy, with especial reference to Eclampsia.

WILLSON (ROBERT N.). *Amer. Jour. of Obstet.*, February, 1904. Vol. cxxvii., p. 203, No. 383.

THE author discusses the following questions:—

1. What are the customary findings during a (clinically) normal pregnancy?

In answer to this it may be stated as a general working rule, that the urinary picture, which is normal for the ordinary conditions of life is also indicative of normal conditions in pregnancy. There may be variations from the ordinary normal urinary picture which will still admit of a clinically normal labour. In a series of 1800 analyses made by the writer, a considerable number being in the later stages of pregnancy, only 22 per cent. were entirely free from albumen and sugar, whilst in no case in which glucose was noted was albumen absent. In nearly 60 per cent at least a trace of albumen could be detected. Glucose generally appeared in the last month. In the majority of cases the urea elimination was that of the normal woman under ordinary circumstances, its excretion varying in relation to exercise and diet.

2. What variations from the normal may be noted and what is their significance?

Most cases of pregnancy present minute traces of serum albumen in the urine, and these can be detected if sufficient care be devoted to the search, probably due to pressure by the gravid uterus. Normal urine always contains a few hyaline casts, but the presence of casts of the granular, blood, and epithelial variety, is a matter of the highest importance. Glucose and lactose may often appear in small quantities, and when confined to such, have no practical significance. A large amount of urea is an important indication of the work of the kidneys, a decided fall in the amount excreted being a reliable indication of oncoming eclampsia.

3. What dependence can be placed on urinary analysis as a warning against impending eclampsia?

The most reliable indications of impaired renal function and of probable eclampsia have been shown by general experience to be the presence of decided quantities of serum albumen, the diminution of the eliminated urea, and the presence of a microscopic renal sediment. Even if the urine appears perfectly normal, the possibility of eclampsia must be considered especially in young women.

COMYNS BERKELEY.

Thyroidectomy and the Occurrence of acute symptoms during the course of Pregnancy in a Rabbit.

RICHLON (L.) and JEANDELIZE (P.) *Comptes Rendus des Séances de la Société de Biologie*, January, 1904.

IN this paper the authors give the results of an experimental research which was undertaken in confirmation of some clinical observations regarding the influence of thyro-parathyroid insufficiency on certain acute symptoms sometimes occurring during the course of gestation. A rabbit of good fecundity was impregnated on August 4th, 1903, and six days later the whole thyroid gland was removed along with the two internal parathyroids. Precautions were taken to leave the two external parathyroids intact. No pregnancy had occurred, so the animal was again impregnated on October 15th. Labour came on prematurely and lasted three days, during which time the rabbit was in a semi-comatose condition with its eyes half closed. Occasionally it wakened up, took a few steps, and then fell back into the same drowsy state. Muscular twitchings were observed, and there were munching movements of the jaws and grinding of the teeth. First of all two dead fœtuses were born, and for a short time the mother seemed to be somewhat better. With the

onset of labour the body temperature was found to be remarkably lowered. Somnolence continued, and later on two more dead fœtuses were born, after which the rabbit became quite comatose and died. The urine contained very slight traces of albumen.

In this case the symptoms followed an acute course. The nutrition of the animal did not suffer from the operation, but it would be impossible to attribute the acute symptoms noted to any other cause than the thyroidectomy. The very slight quantity of albumen in the urine the authors regard as bearing no special significance. But on reviewing the main features of this case they remark that it is difficult not to think of the acute symptoms sometimes observed in pregnant women, and described under the name of eclampsia. Apart from actual convulsions the rabbit's condition was quite similar to that of a woman in eclampsia—the analogy was more to eclamptic coma, and to uræmia without albuminuria.

OLIPHANT NICHOLSON.

The Influence of Thyroidectomy on Lactation in the Rabbit. The Effects of Thyroidectomy on the Adult Rabbit.

RICHON (L.) and JEANDELIZE (P.). *Comptes Rendus des Séances de la Société de Biologie*, January, 1904.

THE acute symptoms observed during the course of gestation in different animals after thyro-parathyroidectomy, as already described, do not seem to be constant. Sometimes at the time of labour there are no symptoms which recall eclampsia, and after parturition the animals develop chronic symptoms which are attributable to the removal of the thyroid gland. In three rabbits the authors removed the whole thyroid along with the two internal parathyroids, and the results observed were all very similar. There were no acute symptoms at the time of labour, and the animals suckled their young. A few months later they became cachectic, their temperature was very low, and death occurred. The mammary glands were found to be greatly enlarged, and were gorged with milk. An autopsy demonstrated the presence of fatty degeneration of the liver.

Thus in these rabbits there persisted an abnormal and excessive secretion of milk in the breasts, and it would seem possible that thyro-parathyroidectomy can influence the mammary glands so as to determine and prolong an abundant secretion of milk. The authors admit that contradictory facts can be cited against the results of these experiments. Thus Hertoghe in feeding a cow with thyroidin observed a very remarkable increase in the quantity of milk, and it

is also well known that thyroid when administered to nursing women often acts as a galactagogue. Moussu removed the thyroid from a pregnant goat nearing full term, and in it the lactation was apparently defective. According to Drago the parathyroids participate in the function of lactation, and he found that a dog from which he removed the parathyroids had only a very small supply of milk after parturition. The authors noted particularly that in one of their rabbits the remaining parathyroids were very large, and, admitting Drago's hypothesis, they suggest that the abundant secretion of milk might be related to the persistence of the parathyroids, and that the thyroid might really exert a restraining influence on these glands in the function of lactation. However that may be, it is interesting to observe that the adult rabbit when pregnant succumbs to thyroidectomy, and presents the following principal chronic symptoms:—(1) The persistence of lactation, and (2) the non-appearance of the hairs on the front of the abdomen—which hairs the animal tears out at the time of labour. All this proves that pregnancy in order to run a normal course requires the integrity of the thyroid body.

OLIPHANT NICHOLSON.

On the Indications for Induction of Labour to be obtained from Examination of the Blood.

MACÉ (O.). *L'Obstétrique*, January, 1904.

THIS article describes in detail the changes occurring in the blood of a pregnant woman after repeated hæmorrhages. The conclusion of the author is that after repeated hæmorrhages labour should be induced at once if the examination of the blood shows a polynuclear leucocytosis. This condition of the blood reveals a commencing infection which will probably lead to an abortion and also may endanger the patient; it is therefore safer to induce labour and obviate the risk of further infection. Short of this leucocytosis the mere presence of ill-developed red corpuscles with deficient hæmoglobin is in itself an indication for induction of labour.

E. H. L. OLIPHANT.

The Ætiology of the Ischuria in Retroflexion of the Gravid Uterus.

REED (CHAS. B.). *Amer. Jour. Obstet.*, February, 1904.

VARIOUS theories have been put forward to account for the retention of urine in cases of backward displacement of the pregnant uterus:—

1. The formation of a valve-like fold on the posterior wall of the neck of the bladder, which fold is so developed that the catheter meets with no resistance, whilst the outflow of urine is effectually prevented.

2. The formation of bends and kinks in the course of the urethra.

3. Elongation of the urethra with stretching of its walls so that the lumen becomes smaller and finally entirely obliterated.

4. Direct pressure upon the urethra and neck of the bladder by the displaced cervix causing mechanical occlusion of the canal.

5. The œdematous condition of the bladder walls which, according to Kolischer, is always to be seen on cystoscopic examination in these cases.

None of these theories can be regarded as satisfactory, and grave objections can be urged against every one of them; there is only one function which can be interfered with to produce such results, and that is to be found in the nerve ganglia which supply motor and sensory filaments to the wall of the bladder. When the growth of the uterus reaches such a point that compression of some of the ganglia or fibres of the pelvic plexus occurs, the retention is suddenly inaugurated, for the delicate reflex mechanism upon which the act of micturition depends is interfered with. At first it is the motor nerves which suffer, the sensory nerves being comparatively unaffected, the subjective symptoms are greatly intensified as the bladder increases in size until such time as the engorgement produces pressure effects with the paralysis of the sensory nerves. In some cases the sensory ganglia are also compressed and the evolution of the case proceeds painlessly.

HERBERT WILLIAMSON.

A Vesicular Mole in a Twin Pregnancy and Irregular Formation of Lutein cells in the Ovary from a case of Vesicular Mole.

BIRNBAUM. *Monats. für Geburts. und Gynäkol.* Bd. xix., Ht. 2.

THE occurrence of a vesicular mole and a healthy fœtus in a twin pregnancy is an occurrence of extreme rarity, but is of great interest as throwing some light, in relation to modern researches, on the causation of vesicular degeneration of the chorion. The case was that of a married woman 37 years old, who had had but one child nine years previously. When first seen she presented the signs of pregnancy, with the history that after missing one menstrual period

in May, 1903, she had had irregular hæmorrhage until September. When seen she had œdema of both legs, albuminous urine, and an abdominal tumour of the appearance of an eighth month pregnancy. The diagnosis of placenta prævia was first made, but after plugging the vagina on account of hæmorrhage some vesicles were found and vesicular mole was substituted as a diagnosis. A large colpeurynter was placed in the vagina, and soon good uterine contractions began, resulting in the expulsion of first a vesicular mole weighing two kilogrammes and then a fœtus 30cm. long and weighing 590 grammes, whose placenta presented no important abnormalities. The patient suffered very considerably from the blood losses she had sustained, and in addition had an attack of catarrhal pneumonia from which she made a good recovery. The albuminuria, which started during the pregnancy soon cleared up after delivery. The theories concerning the causation of vesicular mole are practically two, that of Virchow and that of Marchand. Virchow considers the condition to be a myxomatous degeneration of the stroma of the villi, the result of some direct irritation from the lining of the uterus or the maternal blood. Marchand, however, holds that the myxomatous change is secondary to a change in the syncytium; that solid syncytial buds grow and proliferate, and into them processes of connective tissue grow from the villi, which being poorly supplied with blood, soon degenerate and liquefaction results. Thus these two theories are directly opposed, as the one presupposes a disturbance of the villous connective tissue by an irritation from the maternal side, the other an immediate and primary pathological condition of the ovum itself. The upholders of the first view admit that the necessary changes in the decidua or maternal blood are not well understood. Marchand, however, holds that these changes in the decidua are secondary to the primary pathological condition of the ovum. That premature death of the fœtus has nothing to do with the causation of vesicular mole seems clear, for otherwise vesicular degeneration should occur in all cases in which the fœtus perishes prematurely. The recurrence of vesicular mole in the same woman, even with different husbands, looks as if it had something primarily to do with the maternal organisation. The occurrence of a vesicular mole and a healthy twin fœtus upholds Marchand's view, the first ovum being in some way pathological the second healthy. On the other hypothesis both ova should degenerate unless we could believe that the decidual changes were localised to a small part of the uterus and so would not alike affect both ova. If a primary pathological ovum be accepted as the cause of vesicular mole, then the recent works of Stöckel, Pick, and

Runge is of great interest. These observers found in the ovaries of women dying from vesicular mole a condition of multiple cysts with over-production of lutein substance and a widespread scattering of lutein substance in the ovarian stroma. L. Fränkel, from many experiments, too, has come to the conclusion that the lutein substance is of a glandular nature, has an internal secretion, and exercises an important influence on the imbedding of the fertilised ovum and its development. On this hypothesis the present case may be explained thus:—The healthy ovum, in spite of some (supposed) over-production of lutein substance, developed normally, but the unhealthy one, under the same influence, developed a vesicular mole. If over-production of lutein substance alone was the cause of vesicular mole, then both ova should have degenerated—according to Marchand's view only the originally pathological ovum would be so affected. A point of some interest, too, is the occurrence of nephritis in these cases. According to Marchand the syncytium is the chief builder up of food stuffs for the fœtus from the maternal blood, the Langhan's layer being more concerned with the giving up of waste products. If great proliferation of the syncytium and Langhan's layer occurs, larger quantities of food stuffs will be built up and much more waste products will result and be thrown into the maternal circulation. These waste products are of a toxic nature and will exercise a deleterious influence on the maternal organism.

Six weeks after leaving the hospital the patient—the subject of this paper—died of myocarditis. The examination of the ovaries after death showed that the left one had in it two corpora lutea. One of these was quite normal, but the other had no marked tunica fibrosa, and the tunica propria and lutein layer were not easily distinguished. Also the tunica propria was broken in several places and bands of lutein cells were spreading into the ovarian stroma. These appearances are the same as those already described by Stöckel, but there was no evidence of a polycystic lutein degeneration as described by Pick.

THOS. G. STEVENS.

Hæmatoma Moles.

BAUEREISEN (A.). *Zeits. für Geburts. und Gynäkol.* Bd. li., Ht. 2, 1904.

BAUEREISEN considers that at the present day everyone admits that there is a difference between the hæmatoma mole of Breus and the ordinary carneous mole. There is by no means a consensus of

opinion, however, as to the mode of formation of Breus' mole. The clinical history in cases of Breus' mole is that of missed abortion, the embryo is very poorly developed, there are subchorial hæmatomata and excessive folding of the fœtal membranes.

He gives a careful description of a typical case in which an ovum, the size of a hen's egg, was passed spontaneously on June 6th by a woman whose last period had been in October of the year before. She had been examined in March and April, as she wished to know whether she was pregnant, and the uterus had been found to be the size of a two weeks' pregnancy and very firm. Six weeks after the passage of the mole she was curetted, and a severe degree of glandular and interstitial endometritis was found. On examination of the ovum the amnionic cavity was found to be dilated, and there was much blood-clot between the chorion and the decidua. A very rudimentary embryo 8mm. in length was found without trace of limbs, eyes, ears or mouth. The yolk-sac was extraordinarily small. Many chorionic villi were found in the lumina of decidual veins. The veins which did not contain villi seemed to be compressed by the latter. The embryo had evidently been dead for months and the fœtal membranes had continued to grow after its death. The subchorial hæmatomata consisted of a large collection of blood in the intervillous space. The stasis in the intervillous spaces seemed to be due to the entrance of dead villi into many decidual veins, and compression of the other veins by the villi which surrounded them. On account of the obstruction to the venous return hydramnios results. The resulting disturbance in its nutritive supply explains the faulty development of the embryo and its early death. After its death the membranes continue to grow although their nutrition is not so good as it is normally. With the death of the embryo the amnionic fluid, of which there was an excessive amount, ceases to be poured out, and is gradually absorbed, so that a shrinking, followed by a marked folding of the membranes, results.

He concludes: "There is a typical form of molar pregnancy which should be called 'aneurysm mole' instead of 'hæmatoma-mole.' The primary cause is disease of the endometrium, the direct cause being the blocking of the efferent blood-stream of the intervillous spaces by the displaced chorionic villi. As secondary causes must be considered the early occurrence of hydramnios, and the growth of the fœtal membranes after the death of the embryo.

HENRY RUSSELL ANDREWS.

A Case of Placental Polypus.

Oui (M.) (of Lille). *Comptes Rendus de la Soc. d'Obstét. de Gynécol. et de Pœdiat. de Paris*, February, 1904.

Rather more than a year before she presented herself for treatment, the patient had a miscarriage, during the third month of her pregnancy; since that time she had suffered from irregular and profuse uterine hæmorrhages; there had been no offensive discharge and no pain, but for the last six months she had been weak, ill, and anæmic. On examination the uterus was found to be bulky and retroflexed; the cervix hypertrophied and torn, with eversion of its lips. M. Oui therefore proposed to curette the uterus and to amputate the cervix, "but," he writes, "when I dilated the cervix there was very great hæmorrhage, and on introducing my finger I found on the anterior wall of the uterus, just above the os internum, a mushroom-like body, mammilated and soft. I thought that I had to deal with a case of deciduoma, and not liking to perform a very severe operation without having obtained the consent of the patient, I packed the uterus and sent her back to bed. The profuse hæmorrhages described by the patient, the very obvious deterioration of her general health, less marked it is true than is usual in cases of malignant disease, the presence of this tumour, more than a year after an abortion which was supposed to have been complete, all confirmed my diagnosis of deciduoma malignum."

No portion of the growth, however, was removed for microscopic examination, but the operation of total abdominal hysterectomy was subsequently performed. The patient made an uninterrupted recovery.

The examination of the specimen. The uterus measured 9cm. in length and 6cm. in breadth, the cavity was dilated, and to the right side of the uterine body, situated partly upon the posterior but chiefly on the anterior wall, was a polypoid mass the size of a walnut. The surface was irregular and mammilated but not villous. A section cut through the attachment of the base of the tumour to the uterine wall showed clearly three zones, the first of placental tissue, the second of uterine mucosa, and the third of muscle. The placental zone consisted of an aggregation of chorionic villi of all shapes and sizes, separated from one another by blood spaces, the villi consisted chiefly of organized connective tissue, but in many parts possessed a

perfect investment of syncytium, and there was in some places marked syncytial proliferation. Langhan's cells were not found.

The uterine mucosa in its more superficial part was composed of decidual cells, but was infiltrated in places with leucocytes and fibrin; in its deeper layers it presented flattened glandular spaces lined with low cubical epithelial cells. The muscle showed in section bundles and strands cut in all directions; the bundles were in places separated from one another by small-celled infiltration but in other respects appeared natural, and showed no evidence of syncytial invasion.

This examination proves the diagnosis to have been wrong, the case being really one of placental polypus, described by certain authors under the name of deciduoma benignum. The writer regrets that he did not remove portions for microscopical examination before he performed hysterectomy. He discusses the possibility of these tumours becoming malignant, and concludes that there is no evidence to justify for such a view.

HERBERT WILLIAMSON.

Paternal Alcoholism as a Cause of Inability to Suckle.

BUNGE. *Virchow's Archiv.* Band 175, Heft 2, S. 185.

PROF. BUNGE states that inability to suckle the infant for a full year, or even for nine months, is rapidly on the increase, and that in mid-Europe more than half the mothers are unable to perform this duty. He obtained statistical material by sending out question forms to his pupils in practice. The questions were numerous and detailed, but all referred to family history with regard (*a*) to the power of suckling; (*b*) to the consumption of alcohol; (*c*) to certain diseases, such as tubercle, in which inheritance plays a part. Bunge obtained 1,629 histories. In families where both mother and daughter were capable of suckling their children the daughter's father was a drunkard in 2·6 per cent. of cases. In families where both mother and daughter were incapable the father was a drunkard in 19·1 per cent. of cases. In families where the mother was capable of suckling, the daughter incapable, the father was an immoderate drinker in 35·7 per cent. of cases and a drunkard in 42·2 per cent. of cases. Associated with the loss of the power of suckling there is an increased liability to dental caries, to tuberculosis, to the psychoses and to nervous disease. Bunge's chief conclusion is that alcoholism in the father is the main cause of the loss of the power of suckling in his female descendants. He finds that when once the power of suckling is lost the descendants

are most unlikely to recover it. The disability is transmitted to future generations.

Bunge's questions were of rather a leading character, and probably an undue proportion of his cases show abnormality. The subject deserves further investigation, preferably in a large body of unselected cases in one of the outdoor maternity charities.

W. S. Handley.

The Comparative Digestibility of Raw, Pasteurised and Sterilised Milk

Price (T. M.). *New York Med. Jour. and Philad. Med. Jour.*, Feb. 27, 1904. Vol. lxxix., No. 9.

Calves were fed through a preliminary period of three days and then a regular period of five days, the milk used being analysed during the entire time while the undigested matter was collected and analysed only during the regular period. The feeding was done first with raw, then with Pasteurised, and then with sterilised milk, using the same calf for each kind of milk and in some cases repeating the series with the same calf. Full details of the experiments are given, and the following are the results:—The digestive co-efficients are, with one exception, slightly in favour of the raw milk. The result of the experiments when the sterilised milk was given was widely different from the established theory in regard to the action of such milk on the animal's stomach. It is usually supposed to cure constipation, and is often advocated as a cure for scours in calves. In these experiments it caused severe scouring. In comparing the results of the raw and Pasteurised milk the difference is, although small, very constant in favour of raw milk.

Calves were selected as the experimenter was unable, after every effort, to obtain babies. The experiments were conducted when the calves were about two weeks old, at which time they are very susceptible to any irregularity in food; and as cows' milk is the natural food of the calf, the author thinks that any change in the milk which would prove to be harmful or which would make milk less digestible when given to a calf should certainly be looked upon with suspicion before being given to an infant.

Comyns Berkeley.

A Case of Prenatal Appendicitis.

JACKSON (FRED). *Amer. Jour. of Med. Sciences*, April, 1904. Vol. cxxvii., No. 4.

AT a *post-mortem* held on a fully developed female child, well nourished and 40 hours old, the appendix was found to be much elongated and congested, lying upon the cæcum and bound down upon it by numerous and firm adhesions. The surfaces of the appendix, where it is reduplicated on itself, were firmly bound together. The small intestine, and the colon below the ileo-cæcal opening, presented no evidence of inflammatory action.

The child's death was due to the administration of a blue tablet of bichloride of mercury with citric acid, but the administrator was not identified.

COMYNS BERKELEY.

GYNÆCOLOGY.

A Contribution to the Function of the Corpus Luteum.

RIES (EMIL). *Amer. Jour. Obstet.*, February, 1904.

FRAENKEL has recently published a paper elaborating the theory that menstruation is caused by the activity of the corpus luteum. In this paper Fraenkel reports nine cases by which he claims to prove that if the corpus luteum be destroyed by the Paquelin cautery, the menstruation due after the operation does not take place.

Ries has lately had an opportunity of putting this theory to the test, and records the following interesting case:—

In October, 1903, he operated upon an unmarried girl of 18, who had previously suffered from two slight attacks of appendicitis, and was just recovering from what was believed to be a third attack. The peritoneal cavity contained a quantity of bright-red fluid blood, but the appendix, which was bound down by adhesions and contained a concretion, showed no evidence of recent inflammation. The appendix was removed. The source of the hæmorrhage was then sought for in the uterine appendages. Both tubes and the right ovary presented nothing abnormal, but the left ovary was twice as large as the right, and on its convex border was seen a freely oozing corpus luteum—a small clot escaped from it as the ovary was pulled up. A wedge-shaped incision was made comprising the bleeding

opening, the ovary being held by two fingers at its base. When the fingers were removed the hæmorrhage was found to continue, and therefore the corpus luteum was peeled out with a blunt instrument, care being taken to keep outside the yellow tissue. Immediately the hæmorrhage stopped; the edges of the ovarian tissue were then united with a fine cat-gut suture.

This patient's menstrual period was due on October 24th, it occurred on October 27th, that is three days later, lasted the usual number of days (four) and was of the usual amount. "The extirpation of the corpus luteum failed to prevent or to check the expected menstruation."

Fraenkel finds that extirpation of the corpus luteum performed near the time of the expected menstruation does not prevent it with absolute certainty, but when the mature follicle was destroyed the menstruation was missed in every one of his three cases of this class. "It is entirely probable that the extirpation of the corpus luteum did not prevent menstruation in this case because the corpus luteum had produced enough of the hypothetical internal secretion to start the menstruation after the corpus luteum itself was removed."

HERBERT WILLIAMSON.

The Situation of the Corpus Luteum in Four Cases of Ectopic Gestation.

WORRALL (RALPH). *Australasian Medical Gazette*, March 21, 1904.

FROM a physiological point of view these four cases illustrate a phenomenon concerning which but few observations have been recorded:—

March 26th, 1903.—Hannah McG., No. 309. Symptoms of ruptured ectopic gestation; abdominal section; right tube gravid; the right ovary contained no corpus luteum.

Jan. 19th, 1903.—Florence A., No. 288. Symptoms of ruptured ectopic gestation; abdominal section; right tube gravid; right ovary contained no corpus luteum; left ovary enlarged; on incision it was found to contain a large corpus luteum.

Sept. 6th, 1903.—Mrs. W. J. Symptoms and signs of ruptured ectopic gestation; right tube gravid; right ovary transformed into a cyst; no trace of ovarian tissue or corpus luteum.

J. W., 28, a 1-para. Admitted to Sydney Hospital on Nov. 2nd, 1903; nine days previously she was seized with very severe sudden pains in the abdomen, accompanied by vomiting. This gradually

passed off, but returned with much greater intensity the day before admission, when she was found cold, and collapsed on the floor of her room. Operation next day when partial reaction had occurred. The rupture had occurred close to the left uterine cornu. The ovary on this side contained no corpus luteum, and was quite atrophied. On the other side, the ovary contained a large, fresh corpus luteum. The fimbriated end of the tube on this side was quite occluded.

It will be seen that in two of these cases the evidence was positive that the ovum came from the ovary on the side opposite to the gravid tube; and in the other two, as the ovary on the affected side contained no corpus luteum, it must have been in the ovary of the opposite side, and the ovum must in all four cases have reached the tube by internal migration across the uterine cavity, or by external migration across the pelvis. As in the last case referred to, the fimbriated end of the tube corresponding to the location of the corpus luteum was occluded, the migration in this case must have been external.

Torsion of Pedicle of Hæmatosalpinx.

MOREL. *Bulletins et Mémoires de la Soc. Anat. de Paris*, Dec., 1903.

THE writer exhibited this specimen before the *Société anatomique de Paris* three hours after its removal by Picqué. Morel exhibited it early as it had not lost the characters and appearances observed when it was fresh. The patient was thirty-two years old. The catamenia appeared at fourteen and continued regular; the patient married at the age of twenty-one and bore four children. The period ceased suddenly on November 30th, and three days later a violent attack of pain in the left iliac fossa set in with severe vomiting. The woman was sent into the Hôpital Bichat, and ruptured extra-uterine pregnancy and hæmatocele were diagnosed. There was a tense, tender, and very movable tumour in Douglas's pouch; the uterus was somewhat enlarged; pulse 130, temperature 99·2°; features pale, anxious expression. On December 4th Picqué operated. The uterus was larger than expected and seemed as though gravid; the right appendages were normal and not displaced. On raising the fundus Douglas's pouch was found to be occupied by a deep, violet-coloured tumour of the size of a turkey's egg, freely movable and not adherent to any adjacent structure. It represented the left Fallopian tube. It was twisted about five or six turns in the inverse direction of the

hands of a watch. The tubal wall was very thin, so that the blood which distended it could be plainly seen. The left appendages were removed.

ALBAN DORAN.

The Treatment of Myoma Uteri.

PFANNENSTIEL. *Deuts. med. Wchnschr.*, March 31st, 1904. No. 14.

IN this paper Pfannenstiel pleads for an earlier and more general adoption of radical operative treatment for uterine fibroids. "The only rational treatment for myoma is, as for all growing tumours, extirpation." He does not go so far as to advocate their removal as soon as diagnosed, but he strongly deprecates waiting until serious symptoms arise. Symptomatic treatment is unsatisfactory and measures like the application of caustics, Apostoli treatment and atmokausis may be dangerous by causing necrosis of the growth.

Indications for operation are:—

1. The size of the tumour, quite apart from the presence of any other symptom. Any tumour the size of a man's head ought to be removed, and in young patients even those of smaller size. Also very nodular growths, because they will most certainly increase and require operation at a later and perhaps less favourable time. The personal factor and the social condition have also considerable influence.

Apart from size:—

2. Tumours which give rise to well-marked symptoms.

3. Submucous fibroids (hæmorrhage).

4. Deeply situated, eccentric, growing myomata, especially the subvesical (compressing urethra) and lateral tumours (damage to veins and its results).

5. Pedunculated, subserous tumours, because of dangers of twisting of the pedicle, incarceration, etc.

6. All rapidly growing tumours (on the ground that they may possibly be sarcomatous).

7. All complicated cases in so far as the complication is dependent on the myoma.

The next question is the method of operation to be adopted. No doubt the ideal one is the removal of the tumour and the preservation of the uterus—the conservative myomectomy. This procedure meets with its most suitable cases in the submucous myomata and those wholly or partly extruded through the cervix. A large interstitial growth, multiple growths, and diffuse adenomyoma necessitate

removal of the uterine body. There is no object in retaining the uterus if the patient obtains greater relief from the more radical operation. By leaving a damaged uterus, many of the original troubles may continue, and in the case of multiple growths it is difficult to be certain that all have been removed. The chances of pregnancy in these cases are but slight. "The too exclusive employment of a conservative myomectomy only brings discredit in the entire myoma operation."

During the child-bearing period of life, the retention of the ovarian function is important, but there is little to be gained by endeavouring to preserve a portion of the mucosa that menstruation may continue. The question of the vaginal or abdominal route must be decided for each case on its merits. Tumours larger than a child's head are better removed by the abdomen. Narrowness of the vagina in multiparæ is easily remedied by incision. The space in the vaginal vault, through which the tumour has to be removed, is much more important. Deeply situated myomata are often more easily enucleated from below, and the condition of the cervix and uterine body as regards asepsis is also of moment. If it is clean laparotomy may be the better way, but the lower pole of the tumour projects into the bacteria-containing part of the vagina, or necrosis has commenced, or there has been much hæmorrhage with stagnation of blood and ascending infection, or if tamponading, cauterising, curetting, and so on have been employed, then the vaginal route is to be preferred. In cases where inflammatory mischief or adhesions are suspected, the better oversight allowed by the abdominal operation is required.

Pfannenstiel has had better results with, and therefore prefers, the supra-vaginal amputation to the total extirpation. The latter he reserves for cases complicated by carcinoma, for large cervical myomata, and for certain infected growths.

J. S. Fairbairn.

On Alexander-Adam's Operation.

Steidl. *Monats. für Geburts. und Gynäkol.* Bd. xix., Ht. 2.

This operation, which certainly had for a time fallen into disuse on the continent and in this country, is now in process of revival, and it is well to note the views of operators on the subject. The author looks upon it as the least dangerous and the most physiological of all radical operations for the treatment of movable retroverted and retroflexed uteri. The operation has no effect on pregnancy or labour

if conception occurs after it. The same cannot be said of ventro-fixation and vaginal fixation, for serious difficulties, even requiring Cæsarean section, have been reported in labours following these operations. The usual dangers of opening the peritoneal cavity and possible ventral hernia associated with ventro-fixation, the difficulties often encountered and possible accidents associated with vaginal fixation, have no counterparts in the operation for shortening the round ligament. The worst that has been said of the Alexander operation is that it is sometimes difficult to find the round ligaments, that they may break when tension is put on them, that wound suppuration may set the ligament free and so make the operation valueless, and finally that an inguinal hernia may occasionally follow the operation. None of these objections are dangerous to life, and many of them are the result of careless operating and insufficient knowledge of anatomy.

In performing the operation the author makes a single curved incision, 12—14cm. long, from side to side above the symphysis, after replacing the uterus and putting in a ring pessary. The incision goes down to the aponeurosis of the external oblique, and the rest of the operation is performed by blunt dissection only until the external abdominal ring is found. The round ligament is set free by blunt dissection pulled out by a pair of forceps, and the peritoneum stripped off by blunt dissection. The drawn-out portion of the ligament is fixed by three or four sutures, the last of which passes through the periosteum of the pubic spine. The wound is next closed and each angle drained by a small india-rubber drainage tube, the latter being removed as a rule on the third day. Splitting open the inguinal canal is objected to, unless for some reason the ligament cannot be found or breaks during traction. The author discusses very fully the possible causes of suppuration, the amount of the ligament to be drawn out, the breaking strain of the ligament, the most suitable suture material and the value of a pessary after the operation, and concludes by giving a complete table of 60 cases. Of these 60 cases six had been done for too short a time for an opinion as to lasting results to be given. Of the other 54 cases 49 were examined afterwards, the shortest length of time intervening being 6 months, the longest $2\frac{1}{2}$ years. Only two cases were found in which the uterus had become again retroverted, all the rest remained in a position of anteversion. In six cases a preliminary colpotomy or bimanual manipulation had been necessary to set the uterus free from adhesions, and a completely good result followed from the Alexander operation. In four cases only was it impossible to find the ligament

or the ligament gave way under tension. In two cases the operation was performed on a pregnant uterus without any evil result. Only four of the patients were known to have conceived after the operation, and in all of them labour proceeded without disturbance. These results cannot be looked upon as anything but encouraging, and may be expected to do something towards bringing the operation once more into prominence.

THOS. G. STEVENS.

A Modified Alexander's Operation.

BARTH. *Monats. für Geburts. und Gynäkol.* Bd. xix., Ht. 1.

IN connection with the revival of Alexander's operation it is of interest to note any modification which is brought forward. The author performs Kocher's modification, *i.e.*, splitting open the inguinal canal from end to end in order to make the finding of the round ligament more easy and to facilitate its drawing out. In addition the author further modifies the operation by opening the peritoneum around the inner end of the round ligament, so that the finger may be inserted into the pelvis. By this means it is easy to test the actual position of the uterus, to examine the condition of the tubes and ovaries, and even to break down adhesions if present, as recommended by Goldspohn, in America; the final closure of the canal being carried out by Bassim's method. For cases of prolapse the author further modifies the operation in that he makes a curved incision from side to side, incises the inguinal canal, opens the peritoneum and draws out the ligaments until the uterus is lying well anteverted. Then the peritoneal wounds are closed and the ligaments are sutured *over* the Rectus muscle in the middle line, followed by exact suture of all incised parts. No drainage is employed but primary healing is procured by wound compression, by adhesive plaister, and sand-bag compression as in herniotomy.

Of 18 cases of retroflexion by the Alexander-Kocher method, there were 2 recurrences in 10 cases examined; of 18 by the author's method no recurrence in 7 cases examined; of 29 cases of prolapse, 10 cases operated upon by the Alexander-Kocher method gave 1 recurrence in 4 cases examined, and of 19 by the author's method, 1 recurrence in 7 cases examined. Altogether this gives 4 recurrences out of 28 cases examined after the operation.

THOS. G. STEVENS.

A Case of Ectopic Pregnancy at full term, with a Communication between the Fœtal Sac and Uterine Cavity.

CHAMBRELENT. *Bulletin de la Soc. d'Obstét. de Paris.* No. 1 Meeting of January 21st, 1904.

A PATIENT aged 38 had been married for 20 years, and had never previously been pregnant. Menstruation ceased on July 20th. On August 6th sudden and severe abdominal pain occurred, together with collapse and a scanty discharge of blood from the vagina. These symptoms lasted some days. A second similar attack followed some weeks afterwards, and was attributed to appendicitis. In November a tumour was discovered in the region of the appendix. In December this tumour had enlarged, and the possibility of extra-uterine pregnancy was considered. The general health was good. At the end of December Chambrelent first saw the patient and found a tumour in the middle line, which extended upwards nearly to the umbilicus; over it the fœtal heart was heard. In March there was an escape of fluid which presented the characters of liquor amnii, and a small blood clot was also discharged. The abdominal tumour became smaller. At the end of April pains, supposed to be labour pains, came on. After some days the patient ceased to feel the fœtal movements, and the fœtal heart could no longer be heard. The fluid which now escaped from the vagina appeared to contain meconium. On May 5th the pains continued, but as there were no contractions of the abdominal tumour during them, and as the os uteri remained closed, it was thought advisable to dilate the uterus with Hegar's dilators and to explore the uterine cavity. The uterus was found to be displaced forwards and to the right, and only slightly enlarged.

On May 9th the pains continued and the pulse and temperature had risen. Abdominal section was performed on the 10th, the dead fœtus was removed, and the fœtal sac was stitched to the abdominal wound. No attempt was made to remove the placenta. The patient died 48 hours after the operation, apparently from sepsis. A complete *post-mortem* examination was not allowed, and no detailed description of the fœtal sac is given, but it was adherent to the right side of the uterus. The right Fallopian tube was continuous with the fœtal sac, and a probe could be passed through the interstitial portion of this tube into the uterine cavity. Through

this opening there had been an escape of liquor amnii and meconium, and in this respect Chambrelent believes that his case differs from all other cases of extra-uterine pregnancy hitherto recorded.

G. Drummond Robinson.

Epithelioma Chorio-Ectodermale.

Pick (Ludwig). *Berlin. klin. Wchnschr.*, Feb. 15 and 22, 1904. Nos. 7 and 8.

This paper gives an exhaustive review of the present position of our knowledge of chorionepitheliomatous tumours arising in connection with teratomata of the genital glands. It is based on a study of five ovarian and two testicular growths.

In the teratomata of these glands the tumours may be derived from all three or from two germinal layers. Also there may occur mixed tumours in which only one germ layer is represented, and indeed only one definite type of tissue, which by the great activity of its growth has choked out everything else. Wilms has shown this in a series of testicular growths (enchondroma, rhabdomyoma), Hanau and Kappeler for adenocystoma of the ovary, and more recently Ribbert has extended these observations. The author has shown in the tumours he has termed "struma thyroidea ovarii," how the growth of thyroid tissue has progressed at the expense of the other constituents of the teratoma. In the mixed growths of the male and female genital glands, besides the thyroid, there is another tissue, with a tendency to so active a growth that it overcomes all the other tissues of the tumour, and that is the chorionepitheliomatous constituent, as discovered by Schlagenhaufer and Wlassow. Here the difference between the ordinary chorionepitheliomatous growth, as met with at the site of the implantation of the ovum, and that in these teratomata may be expressed by saying that in the first case it is in the relation of a descendant, while in the second it is related by consanguinity. One of the specimens under consideration places beyond doubt the possibility of the occurrence of chorion-epitheliomatous teratomata in the female germ glands. This was a teratoma of the ovary from a child of nine years, which contained meso-dermal structures (actively growing sarcomatous tissue), endo-dermal (tubules with goblet-cells) and ecto-dermal, among which, near the skin and central nervous tissues, was pure chorionepithelioma in vast quantities.

The chief point which Pick seeks to establish in this paper is

that these solid or solid-cystic tumours of a very malignant type—epithelioma and cyst-epithelioma chorio-ectodermale—which arise in the ovaries and testicles, usually of young individuals, originate from congenital teratomatous growths. This is proved by (1) the presence of the characteristic syncytium with its vacuolated multinuclear plasma masses with irregular margins; (2) by their relation to teratomous tissues (Ribbert); (3) by the direct connection of the tumour cells with other ecto-dermal cell-forms (*e.g.*, neuro-epithelial). Further, in chorionepithelioma teratomatosum, the chorionic epithelium acquires new and striking characteristics in contra-distinction to the Langhans' cells of the ordinary chorionepithelioma. They show a pronounced tendency to alveolar grouping, and thus provide a typical picture of a carcinoma or alveolar sarcoma, sometimes showing also a more diffuse sarcoma-like method of extension. Also duct-like spaces and cysts may be formed lined by a single or by several layers of Langhans' cells and with papillary growths, sometimes of purely epithelial and sometimes of a connective tissue nature. Finally, by a corresponding arrangement round blood-vessels, they may reproduce the appearance of a circumvascular sarcoma, angio-sarcoma or perithelioma. Hence many of these tumours of teratomatous origin may be found classified under carcinoma, alveolar sarcoma, endo- and perithelioma, and so on.

The paper contains a full pathological report of the specimens examined, together with illustrations of their microscopical appearances. There is also a fairly full bibliography of the recent work on the subject. As it is almost impossible to give a satisfactory abstract within a reasonable compass the original ought to be studied by anyone interested in these tumours.

J. S. Fairbairn.

Epithelioma Chorio-ectodermale: its clinical bearings.

Landau (L.). *Berlin. klin. Wchnschr.*, February 15th, 1904. No. 7.

This paper is supplementary to that by Pick, and contains the clinical record of the five cases of ovarian tumour on which he based his pathological report.

In all five cases the growth was one-sided. In one a simple cyst of the ovary had been removed previously, and at this operation the ovary subsequently removed appeared healthy to macroscopic examination. Three tumours were solid, two solid-cystic, *i.e.*, partly solid and partly cystic, the cysts being not bigger than an

apple. The solid tumours were of about the size of a man's head, roundish and kidney shaped, rather of the shape of a generally enlarged ovary and covered with irregular bosses. To palpation they felt like a uterine myoma. Ascites was present in all cases, in one six litres; it was simply serous, or bloodstained fluid. In two points these tumours are remarkable. First, the youth of the patient—one was a virgin of 36, the other four were 16, 17, 21 and 24 years respectively,—the other is the extraordinary malignancy of the growth. All survived the operation, but with the exception of the last, who shows no sign of return ten months after operation, all died of recurrence within a year. Unlike the ordinary carcinoma the metastasis seems to take place by the veins rather than by the lymph channels, and, in contradistinction to similar growths of the testicle, to occur extensively on the peritoneum and in the subserous tissues. As to the frequency of this form of new growth, it is probably not so rare as is thought. From the statistics of Landau's clinic, it would appear that 15 per cent. of the tumours classified as sarcoma and endothelioma belong to the category of epithelioma chorio-ectodermale.

J. S. Fairbairn.

REPORTS OF SOCIETIES.

OBSTETRICAL SOCIETY OF LONDON.

Meeting, Wednesday, April 6th, 1904, EDWARD MALINS, M.D., *President, in the Chair.*

FORTY-ONE CASES OF PUERPERAL ECLAMPSIA TREATED BY THYROID EXTRACT.

Liuet.-Col. STURMER, I.M.S., read a short communication on the above subject. Ten grains of thyroid extract were given in each case on admission, and five grains every four hours afterwards. Morphia and saline injections were also used in many of the cases. Rupture of the membranes, followed by dilatation of the cervix and the early application of the forceps or other means of assisting labour, was the usual practice adopted. Under thyroid treatment the maternal mortality was reduced to 12·2 per cent. It was claimed that the urine after the first two or three doses showed considerable increase, and that by the end of 24 hours the increase was great, whereas with saline injections and morphia alone, no marked improvement usually set in for 24 hours. It was remarked that most of the cases of eclampsia occurred on dull and cloudy days, when probably the skin did not act as well as usual.

Dr. HERMAN considered that increase in the urinary excretion was one of the most trustworthy indications of recovery of the patient, and that, as when thyroid was given the quantity of urine became quickly augmented, this preparation was really beneficial.

Dr. BOXALL said that he had recently learnt that eclampsia was unduly prevalent in the West Indies as well as in the East. This was attributed by the local doctor to malarial influence.

Dr. OLIPHANT NICHOLSON considered the results of treatment of cases of eclampsia and of impending eclampsia by the thyroid extract as very encouraging. In severe cases he always used morphia in addition.

The PRESIDENT remarked on the difficulty of determining the value of thyroid extract treatment from a series of cases of eclampsia in which other remedies were at the same time used. He was of opinion that atmospheric conditions often exerted a potent predisposing influence in the production of eclampsia.

FIBRO-MYOMA OF UTERUS, WITH CARCINOMA OF BODY, AND FIBROID TUMOUR OF OVARY.

Dr. TATE, in exhibiting this specimen, emphasised the importance of exploring the uterus in cases of hæmorrhage persisting for years at about the time of the menopause and later, because in these cases malignant disease of the body was a very probable cause of the symptoms.

Dr. LEWERS and Dr. BOXALL referred to similar cases of carcinoma associated with fibro-myoma which had come under their observation.

Dr. PETER HORROCKS called attention to the fact that bleeding from the uterus after the climateric in a woman known to have a fibroid tumour

did not necessarily indicate malignant disease of the uterus, as in this case, nor malignant degeneration of the fibroid. Some authorities disputed the possibility of the latter, but Mr. Alban Doran and he himself had shown specimens illustrating sarcomatous changes in fibroid tumours.

Two specimens of DIFFUSE ADENO-MYOMA OF THE UTERUS were also shown by Dr. TATE.

After remarks from Dr. STEVENS, Mr. BLAND-SUTTON, and Dr. F. E. TAYLOR, these specimens were, on the motion of Dr. BLACKER, referred to the Pathology Committee.

Dr. BLACKER remarked that they were the first examples of this kind of tumour to be shown before the Society. Further examination would no doubt show that the glandular down-growths were in reality derived from the uterine mucous membrane.

TORSION OF THE PEDICLE IN HYDROSALPINX, AND OTHER MORBID CONDITIONS OF THE FALLOPIAN TUBE.

Dr. R. HAMILTON BELL dealt first with the literature of the subject. Twelve cases of this rare accident, in addition to 41 collected by Cathelin, were recorded. A full account was given of a case under the author's own observation. The general problem of torsion of the abdominal viscera was discussed. It was pointed out that the particular conditions necessary to the production of this accident were much more frequently present in cases of hydrosalpinx than in other forms of tubal disease. Short notes followed on the two varieties of torsion, acute and chronic, the direction of rotation, and the results of the twist. The influence of age and pregnancy was also discussed. The paper concluded with a consideration of the more clinical aspect of the cases. The close approximation of the symptoms to those of a twisted ovarian tumour was recognised, and the fact was noted that a correct diagnosis previous to operation had never yet been made. But it should be at least suggested when the following conditions were present:— A fluctuating abdominal tumour of irregular shape, not rising above the umbilicus, associated with paroxysmal attacks of pain, culminating in a very severe attack with vomiting and constipation, and if the tumour had been observed before, increase of size, tenderness, and some loss of mobility. The treatment consisted of removal of the twisted tube by abdominal section, and the writer thought that the other tube should be dealt with conservatively whenever possible.

Mr. BLAND-SUTTON regarded the diagnosis of this condition as practically impossible. It was a fact that Fallopian tubes when distended with simple fluid, pus, blood, or even when gravid did twist their pedicles, but it was very difficult to even attempt to frame a plausible theory to explain it; this could be attributed in great measure to our profound ignorance of the statics and dynamics of the peritoneal cavity.

Dr. MCCANN referred to a case of tubal gestation with twisted pedicle which he had published.

Mr. ALBAN DORAN considered that diagnosis must be impossible in many cases, and that therefore this condition was often overlooked and commoner than clinical records would lead us to belive. Again, it seemed probable, for mechanical reasons, that it was easier for a tube than for an ovarian tumour to untwist itself after axial rotation. Tubal torsion to any appreciable degree was rarer than torsion of the ovarian pedicle because the dilated tube soon became fixed by adhesions, whilst many

ovarian cysts did not become adherent to neighbouring structures till after torsion.

Dr. LEWERS referred to a case of pyosalpinx with torsion of the pedicle.

Mr. TARGETT referred to two cases of tuberculous pyosalpinx in which a similar accident had occurred. He thought that in tuberculous disease the conditions were specially favourable for torsion to occur, and that practically all cases of pyosalpinx with subsequent twisting of the pedicle were tuberculous in character.

Dr. BELL replied.

BRITISH GYNÆCOLOGICAL SOCIETY.

Meeting, April 14, 1904, Professor JOHN W. TAYLOR, *President in the Chair.*

Mr. J. FURNEAUX JORDAN read notes of a case of HYDROMETRA in a woman of 63, from whom 13 years previously a large ovarian cyst had been removed, and who had been operated on 5½ years ago for a pyometra. There was an abscess in the scar of the old wound and the uterus was firmly adherent to the scar; a watery fluid exuded from the abscess cavity when the pus had been discharged. He also read notes and showed the specimens from a case of DOUBLE HYDROSALPINX in a woman who for ten years had been subject to attacks of abdominal inflammation.

The PRESIDENT remarked that these cases taken together lent some support to the idea that hydrosalpinx might be a rather late stage of pyosalpinx.

Dr. FREDERICK EDGE showed (1) *a myoma of the broad ligament;* (2) *a vesical calculus formed on a hysterectomy ligature; and* (3) *a displaced spleen,* simulating a broad ligament cyst, and removed from the pelvis on account of torsion of the pedicle and impending gangrene.

Mr. BOWREMAN JESSETT read notes of a case of BILATERAL DERMOID OVARIAN CYSTS with torsion of the pedicle of the larger, and also notes of a case of FIBROID OF THE CERVIX so large as to elevate the bladder to within an inch of the umbilicus, and which he had removed without any injury to the bladder. In the discussion of the specimens

Dr. H. MACNAUGHTON-JONES insisted that hydrosalpinx might be quite independent of any pyogenic invasion.

Dr. BEDFORD FENWICK and Dr. HEYWOOD SMITH also spoke.

Dr. ARTHUR HELME read a paper upon THE TREATMENT OF ECLAMPSIA BY PUNCTURE OF THE SPINAL CANAL, with notes of a case successfully treated in this way.

The PRESIDENT said that Dr. Helme's view as to the benefits of lumbar puncture would require to be proved by further trials; the paper was, however, not only interesting but important.

Dr. MACNAUGHTON-JONES and Dr. R. H. HODGSON concurred in extolling the effects of pilocarpine and Mr. FURNEAUX JORDAN and Dr. FENWICK as to those of bleeding in arresting the convulsions of eclampsia.

Dr. HELME, in replying, pointed out that he had not attempted to criticise the action of any drugs, and gave some details as to the method of puncture; the woman under chloroform being on her left side with her body so bent as to arch the back.

Dr. MACNAUGHTON-JONES then read a paper upon THE DANGERS OF PESSARIES, which was illustrated by a comprehensive exhibit of various forms of these instruments, and by a series of sections of the female pelvis showing the different displacements of the womb with pessaries properly and improperly inserted. He did not by any means reject the use of supports in all cases, and particularly praised that of Galabin and the figure of 8 pessaries made, as recommended by Schultze, to suit individual cases, out of celluloid rings.

On the motion of Dr. HEYWOOD SMITH the discussion of the paper was postponed.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Meeting at Liverpool, Friday, March 25th, 1904, Dr. W. J. SINCLAIR, *President, in the Chair.*

SPECIMENS.

Dr. BRIGGS showed:—1. Case of missed labour with placenta prævia. 2. Sarcoma uteri with recurrence in the portio vaginalis three years after hysterectomy. 3. A recent series of three sloughing intra-uterine fibroids inaccessible per vaginam. 4. Multiple abscesses of the ovary; 14 years' history of salpingo-oöphoritis.

Dr. T. B. GRIMSDALE showed:—1. A pregnant myomatous uterus. 2. Uterus and cystic fibroid removed after a course of electrical treatment.

Dr. A. J. WALLACE showed:—1. Uterus and large fibroid: the broad ligaments formed a pedicle for both uterus and tumour, and torsion to the extent of half a turn had occurred.

Dr. LLOYD ROBERTS (Manchester) related a case of EPITHELIOMA OF THE CLITORIS. The disease began in the glans, and not, as is usual, in the prepuce, which in this instance could be freely separated from the glans. Stress was laid on the early and persistent occurrence of intolerable itching and smarting in these cases, and on the late appearance of pain. Dr. Roberts had only seen three cases of the disease, and the age of the patients was always over 50.

Dr. BRIGGS remarked on the rarity of the condition as compared with the frequency of cancer of the penis.

The PRESIDENT said that despite its infrequency, the condition was usually seen in an early stage, but its treatment was unsatisfactory, as speedy recurrence usually took place.

THE TREATMENT OF RUPTURED ECTOPIC GESTATION.

Dr. NATHAN RAW read notes of three cases of ruptured tubal pregnancy which had come under his care in the hospital recently. In two of the cases the onset was sudden and alarming, the patient becoming rapidly collapsed and semi-conscious, with all the symptoms of serious internal hæmorrhage. In the third case the onset was mild in its symptoms, and the hæmorrhage was limited and not progressive, but in

the course of ten days bleeding recurred, with most alarming symptoms of collapse. In all three cases the abdomen was opened and found to be full of fluid and clotted fluid. The ruptured tubes were ligatured and removed, recovery following in two cases; the third died two days after from shock. Dr. Raw strongly advocated early operation in all cases where the hæmorrhage was serious and progressive, although in a few cases it was desirable to wait a few hours until the patient had rallied from the state of collapse.

Dr. BRIGGS (Liverpool) could not realise the meaning of the expression "an abdomen full of blood." He had never seen it, and felt that hurried operations were a mistake. He had never operated upon a patient who was in a state of collapse, although it was easy to be persuaded that the patient was dying.

Dr. BLAIR BELL (Liverpool) thought that collapse should be treated by transfusion, which was a somewhat neglected method of treatment. Probably the transfusion of four or five pints, together with some adrenalin, would allow of operation being performed in an hour's time.

Dr. LLOYD ROBERTS (Manchester) held that operation should be carried out as soon as possible after rupture had occurred. When there were signs of severe loss of blood it was impossible to tell whether the bleeding was persisting or not, therefore it was safer to open the abdomen.

Dr. FAVELL (Sheffield) suggested that implantation of the ovum in the isthmus of the tube might account for the severe bleeding in Dr. Raw's case.

Dr. DONALD (Manchester) said that his experience of ruptured tubal pregnancy amounted to four cases, and he considered that many cases of so-called rupture were instances of tubal abortion or tubal mole formation. If the tube had undoubtedly ruptured, operation should be performed at once. It was possible that the bleeding might cease if the patient became profoundly collapsed, but as soon as she rallied the hæmorrhage would recommence.

Dr. ARNOLD LEA (Manchester) had had four cases in which the tube was actually bleeding when the abdomen was opened. As a preliminary measure in such cases he had found benefit from placing a heavy sandbag over the abdomen to diminish the amount of blood passing along the abdominal aorta until preparations for operation were completed. He thought it ought to be possible to make an exact diagnosis as to the continuance or arrest of bleeding.

Dr. WALTER (Manchester) took Dr. Donald's view. A bleeding vessel in the tube ought to be treated on ordinary surgical principles. The difficulty was to know whether the hæmorrhage was progressing. A history of previous collapses was in favour of a waiting policy, but even under such circumstances the responsibility was very great.

Dr. GEMMELL (Liverpool) thought that the symptoms in tubal abortion were due rather to peritoneal irritation than to loss of blood, and considered that these two conditions could be differentiated.

Dr. J. M. C. GIVEN (Liverpool) appealed, from the general practitioner's point of view, for some guidance on this somewhat bewildering matter.

The PRESIDENT remarked that in these cases the difficulties were not apparent to him. He had repeatedly seen the abdomen full of blood, and sometimes actually distended by it.

Dr. GRIMSDALE (Liverpool) having spoken, Dr. RAW replied.

The following specimens illustrative of ectopic gestation were then shown and described:—

Dr. J. E. GEMMELL: (1) Unruptured tubal gestation. (2) Tubal abortion.

Dr. T. B. GRIMSDALE: Tubal mole with hæmatocele.

Dr. J. B. HELLIER: Tubal mole.

Dr. A. J. WALLACE: Unruptured tubal gestation.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Meeting, March 23, 1904, Dr. J. R. KELLY, *President, in the chair.*

Dr. MUNRO KERR showed:—

1. *A myomatous uterus with a large multilocular ovarian cyst.*

2. *An ovarian cyst with the pedicle twisted three times.*

3. *Pyosalpinx.*

4. *A pregnancy situated either in the interstitial portion of the tube or in one half of a double uterus.*

Dr. PACE showed a *fibroid tumour of the uterus* undergoing myxomatous degeneration. There was also myxomatous tissue in the broad ligaments.

Dr. JARDINE showed a *curette* for the treatment of abortions. The edge was sharper than that of the ordinary dull curette.

Dr. JARDINE read NOTES OF A CASE OF ULCER OF THE STOMACH after the removal of a large ovarian cyst. The cyst was complicated by the presence of a fibroid tumour of the uterus, which, however, was not removed on account of the debilitated condition of the patient. On the second day after operation the patient became collapsed. The motions after this were dark, like altered blood. On the twelfth day collapse again occurred, followed by coffee-ground vomiting. The patient ultimately made a good recovery.

Dr. CARSTAIRS DOUGLAS said that in some such cases, where death took place, no gastric ulcer was found on *post-mortem* examination, and suggested that this was a case of post-operative hæmatemesis.

Dr. JARDINE replied that post-operative hæmatemesis occurred within a few days of operation, whereas in his case the second attack of collapse occurred on the twelfth day.

Dr. W. L. REID gave an estimate of the RELATIVE MERITS OF VENTROFIXATION and certain other operations for the relief of uterine prolapse and retroflexion. Dr. Reid said that if a prolapse and retroflexion, in which latter term he included retroversion, was capable of being so modified as to effectually relieve the patient by the use of a pessary, he usually contented himself with recommending it, more especially as a permanent cure often resulted. Where pessaries failed and where there were no adhesions, shortening of the round ligaments frequently did well. He had largely given up this operation, partly because of the difficulty

of performing it, partly because of the danger of hernia, and partly because of the appreciation of other operations. The next method he favoured, for prolapse only, was anterior and posterior colporrhaphy. If the uterus was heavy it was well also to amputate the cervix. Later, in young women likely to bear children, he had begun to perform hysteropexy. As a result of his experience of the various operations he had come to the following conclusions:—Where there was otherwise untreatable retroflexion he would employ abdominal suspension. If the appendages were so diseased as to require removal he would also perform hysterectomy. If the patient was beyond the child-bearing period he would amputate the cervix and almost close the vagina. If the uterus was heavy he would fix it to the muscular wall of the abdomen. Where the uterus was not heavy and the woman within the child-bearing period he would restore the perineum and partially narrow the vagina with the introduction of a narrow wedge pessary before the patient got out of bed. Lastly, he believed that in certain cases of prolapse in young women where the uterus was not heavy and where the vaginal tissues were simply dilated, a hysteropexy by which the posterior surface of the uterus, slightly rawed, was attached by three silk sutures to a large surface of parietal peritoneum was a trustworthy operation by itself, and not likely to interfere with a subsequent pregnancy.

REVIEWS OF RECENT BOOKS.

La Gastro-entérostomie: Histoire générale, Méthodes opératoires. Les cent cinquanes premières opérations de la clinique chirurgicale d'Angers, Paris. A. Monprofit, Chirurgien de l'Hotel Dieu d'Angers. Avec 300 figures sans le Texte; 8vo.; p.p. 376. Paris: Institut International de Bibliographie Scientifique, 1903.

This work is a treatise on gastro-enterostomy, its history and its varieties. The experience of M. Monprofit, the author, however, constitutes the main part of the book, and will prove af more general interest to the surgeon. The clinical reports are very complete, and the immediate and distant results faithfully recorded. Besides the usual illustrations representing instruments, there are many rough sketches demonstrating the steps and modifications of the operation. The five tables of statistics are useful and necessary for reference, but would be useless without the clinical reports, especially table 1, which includes 63 cases of gastro-enterostomy for cancer in the gastro-duodenal region. About eight cases are registered in the table as *mort opératoire*, including one where the patient died with cerebral symptoms on the fifteenth day. Other patients survived the operation for but a few weeks, and it was not always clear whether the speedy death could be attributed to the operation or to the exhaustion caused by malignant disease. M. Monprofit points out in his summary that the operation must always be attended by a high mortality when performed in cases of cancer. It is only allowable when the disease is advanced, otherwise the malignant growth may be excised. On the other hand, the results are excellent when gastro-enterostomy is performed for dilated stomach, gastric ulcer, chronic gastritis, and stricture of the pylorus. The tables deserve scrutiny, and are likely to be of value to the future operator. All the author's operations for stricture were successful, as were nine for ulcer, the after-histories of this series being particularly good. In five gastro-enterostomies for chronic gastritis there was one death, due to pneumonia, on the fifteenth day, a second case required an operation three years later for adhesions, and recovered. Out of 15 operations for dilatation 13 recovered and did well, but two died in the early part of the first week from some undetected cause. In conclusion, the reader will be interested in M. Monprofit's opinion on the relative merits of the simple anterior and posterior and the "Y" modification of the operation in question, based on his own experience and that of his colleagues at Angers.

PUBLICATIONS RECEIVED.

The Editor begs to acknowledge receipt of the following publications:—

"Obstetrics for Nurses." JOSEPH B. DE LEE. *W. B. Saunders, Philadelphia and London.*

"Atlas and Epitome of Operative Gynæcology." O. SCHAEFFER, edited by CLARENCE WEBSTER. *Idem.*

"A Sketch of the History of Obstetrics in the United States up to 1860." WHITRIDGE WILLIAMS.

"The Closure of Laparotomy Wounds as Practised in Germany and Austria." WALTER H. SWAFFIELD. *J. and A. Churchill, London.*

"Albany Medical Annals."

"Liverpool Medico-Chirurgical Journal, 1904."

"The Honorary Staff of the Manchester Royal Infirmary from 1752 to 1830." BROCKBANK. Manchester University Series. *Sherratt and Hughes.*

"Biographic Clinics." GEORGE M. GOULD. *Rebman, Limited, London,* 1904.

"Die Cystoskopie des Gynäkologen." Dr. WALTER STOECKEL. *Breitkopf and Härtel, Leipsig.*